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AMERICAN FORESTS

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THE AMERICAN FORESTRY ASSOCIATION

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The American Forestry Association is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities, of which publication of AMERICAN FORESTS is one, seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, in order that they may contribute permanently and in the highest degree to the welfare of the nation and its people.

In addition to publication of two magazines — AMERICAN FORESTS and CONSERVATION, both designed to keep before the people of the country important conservation questions and issues, the Association carries on educational projects in various fields including forest fire prevention, reforestation, protection and propagation of fish and wildlife, upstream flood control, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, development of forestry by private endeavor and the teaching of conservation in the schools of the country.

The Association is independent. It has no connection with any federal or state governments. It is non-political and non-commercial. All its resources and income are devoted to the advancement of conservation. It has been so operated since its founding in 1875. All citizens interested in forestry and conservation are eligible for membership.

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Member A. B. C.

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READERS' FORUM

A FARMER FINDS AMERICAN FORESTS

SIR: Just a few words of comment on the article "The Farmer as a Conservationist," by Aldo Leopold, (June issue of AMERICAN FORESTS). The reason this article impressed me so much is because I am a farmer and it is exactly what I think and also what I want to do and have others do.

If every farmer would read Mr. Leopold's discussion of conservation and wildlife I think it would make them realize the importance of all wildlife. I am proud to say that on our farm there is no hunting and we have more birds than the average farm in our locality. It is believed by most people in our neighborhood that the "prairie chicken" and chipmunk are all gone, but we have a pair of each and if I can help it they won't be molested.

Although we just have an ordinary farm, I am going to try and do my part in preserving all wildlife — make it my pet hobby. As soon as I get my fall work done, I plan to set out all kinds of plants and trees for wind-breaks, etc.

I just happened to get the June copy of AMERICAN FORESTS and I liked it so much that I've asked the magazine stand in the nearest town to get a new one for me. As soon as I can afford it, I want to subscribe to it for a year or more.—J. PARK BAIRD, Silver Lake, Kansas.

GREAT OAKS OF CALIFORNIA

SIR: Valley oak (*Quercus lobata*) has long been known for its great size and beauty when growing under favorable conditions. Massive specimen trees are to be found in California throughout the Sacramento and San Joaquin valleys and in the valleys in both north and south coast ranges. Some of the most symmetrical of these trees are to be found in the Kaweah delta area of Tulare County, near Visalia and Exeter.

During recent months I have had an opportunity to measure two fine trees of valley oak which are larger in diameter and height than the famed Sir Joseph Hooker oak of Chico, Butte County. That tree in 1916 was ninety-six inches d.b.h., 105 feet tall, and had a crown diameter of 197 feet. This is probably the greatest crown spread of any California oak and is due to the fact that the tree grew in the open and that the massive lower branches have been given artificial cement supports to keep them off the ground.

The Henley oak is situated on the Wolf Hop Company Ranch at the south end of Round Valley, Mendocino County. This great tree forks into two trunks about twenty feet from the ground, but the trunk which measures 104 inches d.b.h. is perfect and has a circumference at the ground of forty-one feet. The tree is 145 feet tall. Its crown spread of 135 feet is somewhat marred by the loss of one branch on the south side.

The Big oak of Lake County, is four miles west of the town of Lower Lake. Its great single trunk is 106 inches d.b.h., which makes it the largest of the three trees in this respect. Its height of 125 feet is twenty feet below that of the Henley Oak and its crown spread is slightly less also.

Hence it appears that Mendocino County has the tallest, Lake County the largest diameter, and Butte County the greatest crown spread among these venerable old trees.

Evidently none of these trees are quite as massive as the Canyon live oak near the Bouquet CCC camp, Los Angeles County. This as described in the *California Ranger* of April 5, 1935, was 132 inches in diameter at five feet from the ground, 100 feet tall, and 150 feet in crown diameter. If anyone knows of larger oaks than these I will be glad to have information as to their dimensions and exact location. — WOODBRIDGE METCALF, Extension Forester, Berkeley, California.

HONEY LOCUST — AN OPINION

SIR: I read with interest the article on honey locust in the July AMERICAN FORESTS. On the whole, it is a very good article, but it shows a lack of knowledge of the latest developments in the honey locust.

Here are the minor phases I question.

1st, the tree does not carry both male and female flowers, the opposite run less than one to one thousand on whatever sex tree it is. But mostly botanists have found no associates at all. Therefore, the male of a thornless strain will make an excellent lawn and shade tree where the beans are not wanted. * * * I cannot agree that they are flat topped except under certain conditions.

2nd, as to their having no nitrogen fixing ability, the last information obtained on this is that although it does not have nodules, some believe it might store nitrogen in swellings in the roots. This theory has not yet been explored fully. Also, there is a possibility that an associating myeorrhiza may stimulate nitrogen fixing.

3rd, his expression relative to it not being of the highest value is, of course, professionally American forestry as it is known today. It was because of my aggressiveness in trying to make tree crops of the forest more important than the timber that lost my job in the TVA. One would think any people fools to rank the straw of wheat high in our national economy and throw the grain away or disregard it. Yet that is the approach professional foresters take in looking at a forest. Is it any wonder we have a break down in our national economy!—JOHN W. HERSHEY, Downington, Pennsylvania.

A TRAIL RIDER LOOKS BACK

SIR: I have just finished my first day at the office after my tour of active duty with the Officers Reserve Corps of the U. S. Army, and in addition the most wonderful vacation that any person could possibly wish for. I really do not intend to exaggerate but that is truly how I feel regarding my stay in the Gila Wilderness (New Mexico), this summer with The American Forestry Association's Trail Riders of the Wilderness.

Before going on the trip I read some of the accounts of previous expeditions and I recall mention being made of the soul satisfying qualities of a trip into the wilderness country. I did not quite understand the real meaning of such descriptions until I was actually in the wilderness and even to a greater extent after my return to civilization.

I have had the privilege of some very enjoyable vacations, but I am absolutely sure in saying that none have given me the complete satisfaction that I found in the wilderness and in the companionship of the people that I met there. My vacations to come are going to lean most strongly toward Trail Rider expeditions. —DR. EDWARD P. BOLLER, Alhambra, California.

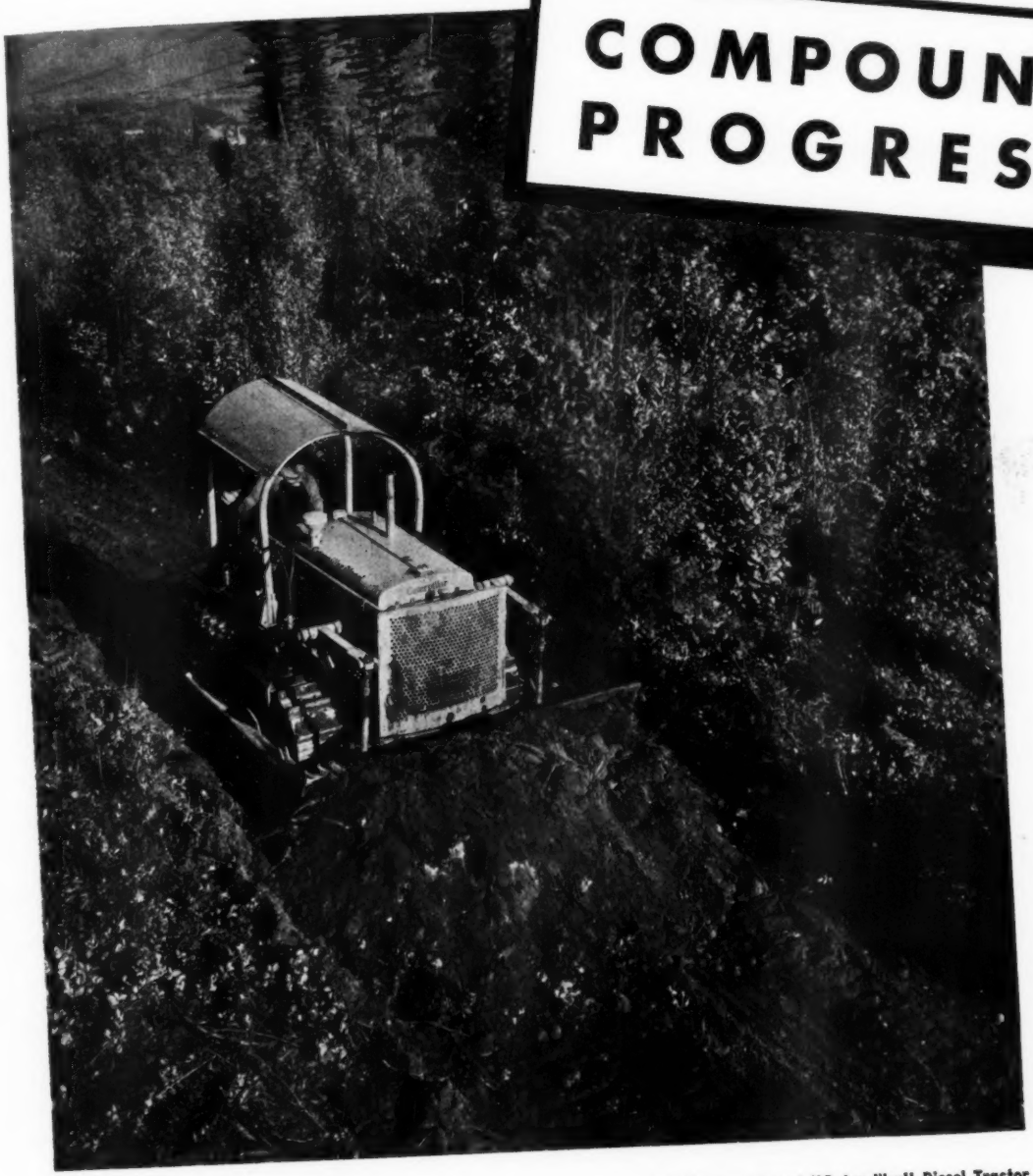
LONG RANGE PLANNING

SIR: Your article and editorial on the forest restoration plan now before Congress are very interesting.

Nora Waln's book about Germany, *Reaching for the Stars,* contains some comments on the German forests that seem to me to contain the answer to the conditions that make this plan, as Mr. Reynolds puts it, "economically and socially not practical for Massachusetts." For she points out that the forest owning families in Germany have a degree of social stability that is rare among New England people, and probably throughout most of America. The Germans are willing to live in the same houses generation after generation, and so are emotionally capable of long range planning, which forest management requires, whereas we too often are not.

But I am wondering if this may not have changed in the past seven years, and if it would not be possible today to find plenty of people, especially young ones, who are emotionally stable enough to settle down and watch a forest grow, instead of constantly wanting to go somewhere else.—JAMES R. RANDOLPH, Kingston, Rhode Island.

COMPOUND PROGRESS



A bulldozer-equipped "Caterpillar" Diesel Tractor rebuilding an old road near Snoqualmie Falls, Washington. Completing a half-mile in an 8-hour day, it uses only 1½ gallons of 7-cent fuel an hour . . . 85 cents' worth of fuel for a day's work!

FORESTRY progress is measured, in part at least, in terms of trails, fire-breaks, and roads. And it is not altogether impossible that "Caterpillar" Diesel Tractors can *compound* that progress! For these machines operate with such efficiency — and such economy of fuel and time — that additional fire-fighting lines may well result from their savings. And, similarly, those miles of trails, fire-breaks, and roads might readily widen the program even further! To a large extent, it is this which has won for "Caterpillar" Diesel Tractors the high regard of the Forest Service.

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OUR DIRECTORS

WILLIAM B. GREELEY

■ William B. Greeley, widely known in this country and abroad for his distinguished work in the field of forestry, has served seven terms—with only one interruption—totalling in all twenty-three years, as a Director of The American Forestry Association. First elected in 1915, Col. Greeley served until 1927, when he resigned because, as Chief Forester of the United States Forest Service, he felt that his direct identification with Government activities was embarrassing to the Association and might militate to lessen its influence as a disinterested exponent of public opinion. Upon his retirement from Government service, however, he was reelected to the Board in 1928 and has served continuously since.

Graduated from the Yale Forest School in 1904, Col. Greeley the same year entered the Forest Service as Forest Inspector in California. Later he became Supervisor of Sequoia National Forest and then District Forester at Missoula, Montana. In 1911 he was called to Washington as Chief of the Division of Forest Management. Immediately after the declaration of war against Germany in 1917, his time was devoted actively to organizing war purchases of lumber and recruiting forester regiments for work overseas. From August 1917, until July 1919, he was on duty with the American Expeditionary Forces in France, first as Major and later as Lieutenant Colonel of Engineers.

He organized forestry operations of the American Engineer troops and during his last year with the American Army was chief of the Forestry Section, a duty which involved the direction of 21,000 forestry troops and ninety-five cutting operations in France. In recognition of his exceptional services during the war, he received the Distinguished Service Medal from the War Department. He also received the medal of the Legion of Honor from the French Government and the Distinguished Service Order from Great Britain.

Returning to America, he became Chief Forester of the United States in 1920, serving until his resignation in 1928 to become Secretary-Manager of the West Coast Lumbermen's Association, with headquarters at Seattle. This is a trade association of loggers and lumber manufacturers in the Douglas fir region of Western Oregon, Western Washington and Southern Alaska, and represents about seventy-five per cent of the total log and lumber production of the region.

Forest conservation is one of the definite aims of the Association, on a parity with its work in statistics, standard grades and grade marking, traffic and trade promotion. A staff of forest engineers devotes its entire time to inculcating good forest practices in fire prevention and reforestation. With sustained yield management as an ideal, the change-over from the old regime of timber liquidation to the new regime of timber cropping by the members of his organization is now one of Col. Greeley's major interests.

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"MORE About Wood Stoves," on page 614 of this issue, has more to it than just a few stoves, more or less. The developments there reflected open a field of wood-using research that may furnish heat to forestry on millions of acres no less than warmth to millions of homes. Thought of those possibilities ought to kindle fires under all forest research agencies to explore the field to its limits because a marketing outlet for fuel wood will mean more to the advancement of commercial forestry than a flock of government subsidies. For want of markets, the amount of fuel wood that rots in our forests today plus the amount that ought to be cut yearly as thinnings to transform worthless thickets of young growth into potentially commercial forests, is a deadening over-all millstone on forestry's neck. As Mr. Heermance pointedly says—"We cannot build up our woodlands without weeding them." And the average forest owner cannot afford to weed his young forest without a market for his thinnings.

Just why the forest research stations or the Forest Products Laboratory have not seized upon this promising field of research, it is difficult to say, but now that private endeavor has struck the spark, it is to be hoped they will take up the torch and help carry forward with necessary funds experiments already started. Forest research channeled to provide more and better ways of growing timber is essential but it must be balanced with forest research to keep markets ahead of timber grown. Otherwise forestry as a commercial undertaking will anchor itself in a sea of wishful thinking and those signs we see so often along the highway "Grow More Timber—It Pays" will continue to raise the question "True or False"?

* * * * *

Conservation as a moral equivalent for war must have been in the mind of Secretary Wallace of the Department of Agriculture when he recently addressed San Francisco's Commonwealth Club. "In contrast with the destruction now going on in the Old World," he said, "we in the New World want to bend our efforts to constructive ends. Instead of spending enormous sums for national aggrandizement and the waging of war, we in the United States want our national energies to go into building for peace—not forgetting the needs of our national defense to make sure we can stay at peace."

Supporting his thesis that action to stop the wastage of our soil is the first step along the road of our New World destiny, the Secretary continued: "Our first concern must be the land itself. Our agricultural fertility, our forests, our watersheds, our entire national life are bound up with the welfare of our soil. When the productive soil is ruined, our civilization will be ruined, and our country will revert to desert and wasteland like the ruined land of Africa and Asia."

It will take more money, more far-reaching measures, more united effort than ever before, the Secretary asserted, "to meet the task before us." But great as the expense of the effort may be, "the cost is not anywhere nearly as great as the cost of combating depression and actually waging war."

The Secretary's remarks are most timely and few men in the country today are better placed than he to convert them into action. With millions of dollars, thousands of men, and wide authority at his departmental disposal, he is in a position to demonstrate as no one else can what may be accomplished by united attack upon the critical situations in our soil and forest economy.

Ovid Butler

Editor.

THE NATIONAL COMMUNITY CH

By ELIZABETH PEEPLES

Electric League of America

"PEACE ON EARTH, GOOD WILL TO MEN"
The Tree—in Lafayette Square, Washington, D. C., 1938

CHRISTMAS TREE

The President of the United States for Sixteen Consecutive Years Has, from This Tree, Broadcast to the Nation A Christmas Message of Peace and Good Will

CHRISTMAS trees are symbols of peace and, as such, they should touch with fresh meaning this coming season the hearts of men, women and children throughout the troubled world. Particularly significant to every American should be the Christmas eve ceremony in the nation's capital at which the President of the United States through the medium of the National Community Christmas Tree extends to all his Christmas message of peace and good will.

This happy custom began in 1923 when Calvin Coolidge was President, a year that was marked by peace instead of war's alarums. Each year since then, in the deep twilight of Christmas Eve, the living evergreen that becomes the nation's official Christmas tree has been lighted by the President in a ceremony which, since 1929, has been broadcast to every corner of the country. More recently, this official lighting of the Washington tree has been the signal for thousands of other community Christmas trees throughout the land to blaze forth with their message of good cheer.

Thus with every American enjoying the privilege of participating in this beautiful ceremony in one way or another the story of the National Community Christmas Tree becomes one of broad interest. Its significance, of course, is generally known, but its origin, its history, and the manner in which it is brought into cheery brilliance each year remain to be told.

To say that the National Community Christmas Tree came into being as the result of efforts on the part of a single individual or a single organization is to reject completely the spirit in which it was conceived. Its illuminated beauty and the simple but impressive ceremony attending its lighting each year results from the work of many individuals and many organizations. Some idea of the extent of this cooperative effort may be gained by examining the official program of the 1938 ceremony. This reveals that "This celebration is sponsored by the Community Center Department of the District of Columbia Public Schools, The American Forestry Association, and the Office of National Capital Parks of the Department of the Interior."

But this is only part of the story. Supporting these sponsoring organizations is a national committee which in recent years has numbered among others individuals representing the Senate and the House of Representa-

The Roosevelt family at the tree-lighting ceremony—the First Lady of the Land receives Christmas roses from the Girl Scouts of America,—a regular feature of the happy annual celebration on Christmas Eve at the nation's capital

tives of the United States, various departments of the federal government, the Board of Commissioners of the District of Columbia, the National Capital Park and Planning Commission, the Boy and Girl Scouts of America, the National Federation of Music Clubs, the General Federation of Women's Clubs, the National Recreation Association, the American Federation of Government Employees, and the National Federation of Federal Employees. The executive committee, to which falls the actual work of organizing the celebration, is drawn from equally diverse sources, its members representing groups already named, and in addition educational institutions, citizen groups, service clubs, trade organizations, the police department, recreational departments, public utilities, social agencies, professional associations, church groups, newspapers and radio companies.

1923—The first tree was a fir, cut in the heart of the Green Mountains of Vermont and presented to the President by Middlebury College for use as the National Community Christmas Tree

The occasion for which this committee plans draws together in communion the entire nation from the President to the humblest citizen who watches the lighting of a Christmas tree thousands of miles distant.

The first National Community Christmas Tree was lighted on Christmas Eve of 1923. This tree, not a living evergreen as were those which followed, was cut in President Coolidge's native Vermont and set up on the Ellipse just south of the White House as a Christmas gift to him. To quote Albert Clyde - Burton of the National Capital Parks, who has been the presiding genius over all National Community Christmas Tree celebrations: "This fir tree was presented to the President of the United States for use as a National

1924 — A living spruce tree, presented by The American Forestry Association from the Amawalk Nurseries, was planted on Sherman Plaza. This shows the President and Mrs. Coolidge—just after the tree was lighted—standing beside the Nation's "Living Christmas Tree"

1929—At a signal from President Hoover, the Tree blossomed with light and hundreds of happy children's voices filled the frosty air with Christmas carols. The President and Mrs. Hoover stand, with their family and friends, beside the Tree

Community Christmas Tree by Middlebury College, in Vermont. The tree was cut in the heart of the Green Mountains and shipped to Washington on a special car." Cooperating with the President and Middlebury College in the consumation of this first celebration were the Community Center Department of the District of Columbia Public Schools, The American Forestry Association, the Potomac Electric Power Company and the Office of Public Buildings and Grounds (now National Capital Parks of the Department of the Interior), to mention a few.

borne their burden of light so long and so faithfully. The two firs were planted by the Office of National Capital Parks, one to the east of the statue of Andrew Jackson, which marks the center of the park, and one to the west—both equally visible from the windows of the Executive Mansion. It was planned that they should be used in alternate years to give each tree a long rest between its bulb-bearing seasons, but actually the same tree has been used annually since 1934.

The National Community Christmas Tree became a

National Park Service

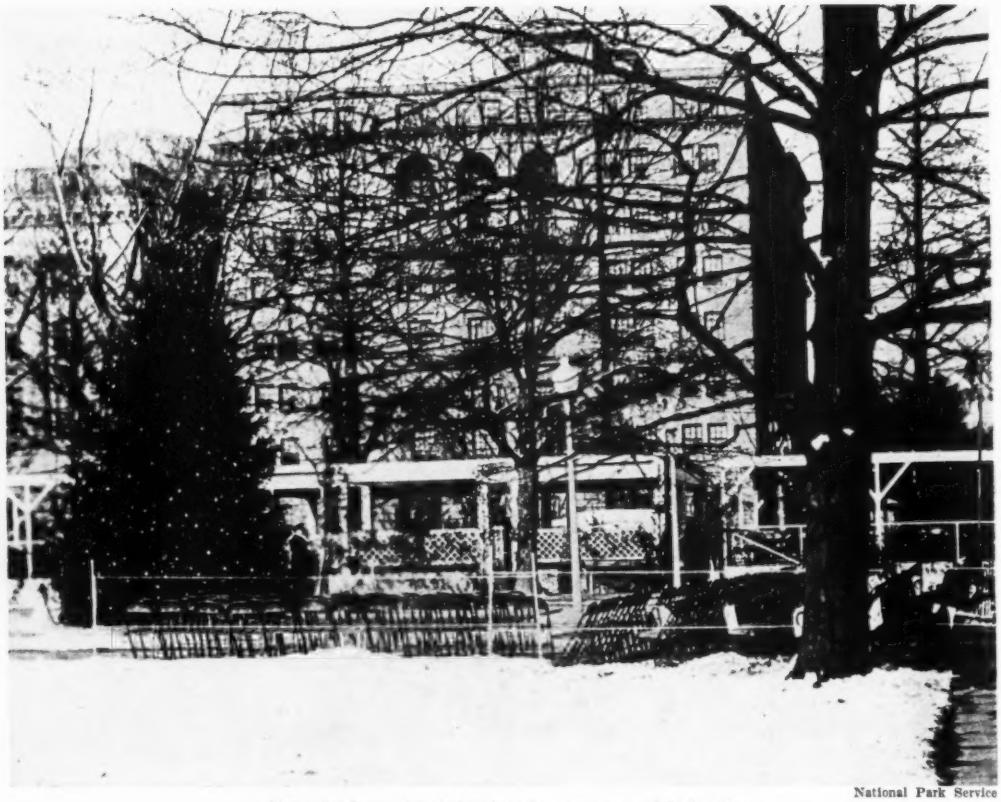
1937—The Community Tree was moved, in 1934, because of the redesigning of Sherman Plaza, to its present permanent site in Lafayette Square, just across the street from the White House. This location was chosen chiefly because of its proximity to the White House and the desire to keep the beautiful annual custom of the President's personal lighting of the Tree as intimate and homely and devoid of unnecessary ceremony as possible

In 1924 The American Forestry Association, represented by Ovid Butler, its executive secretary, presented to the President and to the nation its first living Christmas tree, a Norway spruce, which was planted in Sherman Square close to the east entrance of the White House. Sherman Square is small, but this very fact had much to do with keeping the ceremony, spiritual in character, from reaching carnival proportions.

For eleven successive Christmas seasons this small square remain the scene of the celebration. In 1934 the ceremony was held at the present site of the tree in beautiful Lafayette Park at the front door of the White House. Fraser firs replaced the spruces which had

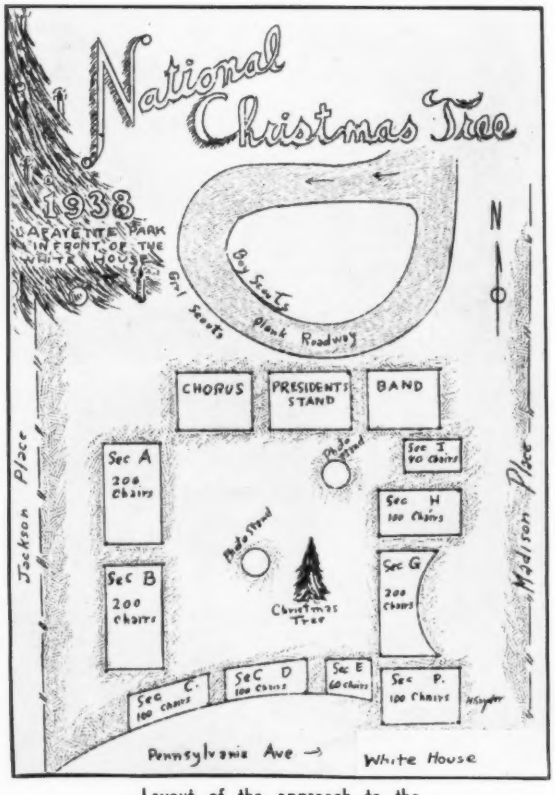
singing tree in 1932 through the concealment of loud speakers among its branches from which poured recorded Christmas carols. Every evening from Christmas Eve to New Year's passersby are enchanted by such songs as "Oh, Holy Night" and "Ave Maria." The first broadcast of the President's Christmas message and the official program was made locally in 1925. Four years later it was put on a coast to coast hook-up.

The lighting of the tree has been an interesting evolution. In the beginning, storage batteries were used to supply the necessary current, but in 1931 temporary connections with the city's power supply were installed. Interestingly enough, there was no actual connection between



National Park Service

The official stand and the Tree, in snow-covered Lafayette Park just across the street from the White House



Layout of the approach to the Tree and the President's stand

the button pressed by the President to officially light the tree and the lights themselves. The button merely worked a buzzer which was the signal to an electrician in a nearby man-hole to throw the switch which lighted the tree.

One year early in the present administration the buzzer failed to work, and to the horrified embarrassment of the committee the tree remained dark when the President touched the button. Fortunately, the man whose ingenuity had been responsible for the buzzer arrangement, was instantly aware of the situation. Hidden by darkness, he dashed to the man-hole, gave a quick order, and, presto, the tree was ablaze.

"There she goes!" cried President Roosevelt, with the exultant satisfaction of a school boy. He had pressed the button again and again and was unaware until later that it was not his effort which had produced the desired result.

In 1937 this electric connection was expanded to include the chimes which signal the radio audience that the President has lighted the National Community Christmas Tree, and that the moment has therefore arrived for the lighting of Christmas trees all over the land.

Since the first tree in 1923, the Electric Institute of Washington, formerly known as the Electric League, has donated the decorations. This gift has been more than mere money, for its members who constitute a committee on lighting the tree have experimented, designed and invented, with the result that many new and beautiful effects have been achieved. The latest novelty is floodlighting the tree so that its natural green is in evidence beneath the decorations.

Every celebration has its musical program. The United States Marine Band leads off with a preliminary concert lasting about thirty (*Continuing on page* 612)

WAR AND WOOD IN GERMANY

By NELSON C. BROWN

The author of this article spent several months in Germany this summer. He returned just as Hitler's armies were moving into Poland and therefore is well qualified to give a cross-section view of the forest and wood situation in the German Reich under present tense conditions. Mr. Brown is professor of forest products at the New York State College of Forestry. His trip this summer was one of several he has made to Germany in recent years in studying forest utilization abroad.—Editor.

IN GERMANY, and to a less degree in a number of other foreign countries during the past decade, wood has been subjected to the microscope and the test tube as never before in European history. A painstaking search has been quietly under way for sources of new products and new uses that will help sustain social and industrial life under the economic strife of peace and war. The developments of these past few years clearly point to the fact that wood will play a far greater role in the present war than it did in the World War of twenty-five years ago. This is particularly true of Germany, where military blockades cut deeply into outside sources of supplies and force the German Reich to stand largely on its own natural resources and its own ingenuity to get the most out of them.

The extent to which Germany will be able to draw upon its forests to help meet the demands of its war machine on one hand and the needs of its new economy with increased populations on the other remains to be seen. The length of the war and the scope of its new knowledge in respect to chemical and mechanical uses of wood may be determining factors. We in America have been led to think of Germany as a country of forest sufficiency. This is not true. In spite of its efficient forestry and the fact that better than twenty-five per cent of its land area is in forests, Germany normally produces only about two-thirds of its annual wood requirements. The balance must be provided by imports, principally from Russia, Finland and Sweden.

Under the stimulus of the four-year plan adopted in 1934 and difficulties incident to importation because of its depreciated currency outside its own country, Germany in recent years has been forced to draw upon its own forests much more heavily than normally. As a result, it is today and has been for a number of years over-cutting its forests by fifty per cent of their normal growth. Such heavy cutting, of course, cannot be maintained indefinitely without depleting its forest capital and ultimately wrecking its whole plan of forest management. While additional forests were brought into the Reich by the acquisition of Czechoslovakia and Poland, it seems doubtful if these supplies will greatly benefit Germany's forest situation because the local domestic needs of these countries were taken over with them and furthermore war and preparation for war have laid a heavy burden upon Germany's forest growing stock.

For example, the system of military highways constructed during the past four or five years and running through forests in virtually all parts of the Reich have called for the cutting of much timber. I have never seen an estimate of the forest destruction entailed by these motor speedways, but as one goes about the forests of Germany, he is impressed with the fact that it must be relatively great. Of course, the timber was used with characteristic German efficiency but nevertheless the Reichsautobahnen clearly have reduced the area of forests and the amount of available growing stock.

A. Ebner

New military speedways operate from the larger cities to the borders of Germany. In their building, forests in many parts of Germany have been sacrificed. Turnouts—such as shown on the right-hand side of the road—have been provided for rest in the inviting shade of the beautifully managed forests

Germany's four-year plan of 1934 was among other things designed to make its raw materials go as far as possible by developing substitutes and improved methods of use. As is well known, it is a country poor in natural resources, particularly iron, oil and metals such as copper, lead, zinc

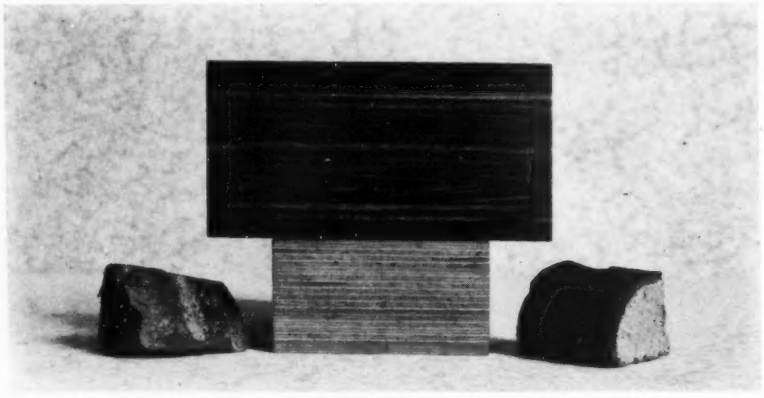
Felling area in the German forests where the rotation has been reduced in many cases from the normal one hundred years in order to provide for the fifty per cent additional cutting which the national economy now requires of state, private and community forests

and tin. It produces no silk and cotton and very little wool. Its soils are relatively poor and it cannot normally produce sufficient food to meet the requirements of its people. These shortages must be made up by imports. It was imperative, therefore, that Germany's four-year plan carry with it intensive research looking to development of new methods for getting the most out of its natural resources and that wood, one of the country's most abundant resources, should have the spotlight of research turned upon it.

Germany's progress in wood utilization is not an open story. One encounters a degree of secrecy, particularly as to developments in the field of chemical progress. This leaves the impression there are developments of which little is being announced but which might be quickly applied to ease the pressure of the Allies' blockade. Great progress, of course, has been made in the utilization of wood for clothing. Textiles in many forms of wood wool, wood cotton and wood silk are now coming from the forest. If one happens to live in Germany, the chances are he would today be wearing a suit containing from twenty to thirty per cent or more of wood fiber. All military, postal, railway and other uniforms contain about thirty-five per cent of wood yarn. Many different chemicals, plastics and forms of plywood and pressed wood also are now being made from the German forests. Methods have been developed and plants have been established for extracting sugars from wood for food for both animal and human consumption. The German chemist can even make candy from wood and is doing it on an experimental scale.

These developments are designed not only to help relieve the import situation but to release the strain on other resources. New forms of built-up wood, for example, are relieving the drain on many forms of metal by making it possible to use wooden machinery gears. An improved type of plywood made from beech and bonded together with artificial resin glues, announced in 1939, is probably the most important mechanical commodity developed in Germany from wood. It makes the German forests available for a great variety of new uses, including gun stocks—for which walnut has heretofore been imported—and for airplane propellers for which metal is now used by most other countries. The high speed world's record for short distance flying made in June, 1939, by a German plane used a propeller made of beech plywood. This same material is bound together into large blocks and then turned out into many forms and sizes suitable not only for gun stocks and propellers but for ax, pick, hammer and implement handles, thus making unnecessary importations of ash, hickory, walnut and other specialty woods. Several types of plastic have been developed for automobile knobs, door handles, steering wheels and scores of other products formerly made of metals or composition materials.

One of the most interesting attempts to devise means of substituting materials that must be imported at enormous expense is the use of wood and charcoal to supplant gasoline. Various forms of alcohol extracted from wood, grapes, potatoes, and sugar beets are being made to mix with imported gasoline for motor fuel and this substitution is being further supplemented by the use of small blocks of wood and charcoal to supply wood gas for various types of engines. The use of wood gas is not so important for passenger automobiles as it is for trucks and for stationary and marine engines. The great difficulty is in starting the engines because the wood must be heated and the gases cooled and cleaned before they can be made available to the carburetors. This generally requires four to five minutes. When the supply of gas



On the lower right and left are two small blocks of beech fuel wood, used as a source of motor fuel in many parts of Germany. Lower center is a block of beech plywood, made in various sizes and used in manufacturing airplane propellors, gunstocks, tool handles, etc. At the top is a piece of compressed wood —used where a hard surface and resistance to abrasion are important factors

is once started, it is maintained as long as the engine is kept running. There is no doubt that great quantities of gasoline are being saved in Germany for war purposes by the domestic use of wood gas.

Some thirty years ago the German railroads turned from wooden cross ties to iron and steel ties. In recent years they have been going back to the wooden tie because experience has demonstrated that, when properly creosoted, it is less expensive and more satisfactory than the metal tie. The wooden tie not only possesses more resiliency but what is more important it does away with difficulties incident to the corrosive features of the metal tie, particularly in regions adjacent to chemical plants and bodies of water.

pilings are needed for trench shoring, supports for dugouts, duck boards in the trenches, new rail heads for artillery emplacements, barracks, storage sheds, temporary shacks, offices and other buildings. When one considers these needs and the increased utilization of wood made possible through new developments imposed upon the normal wood needs of the country, it is apparent that Germany's forests must bend heavily under the load of this new war.

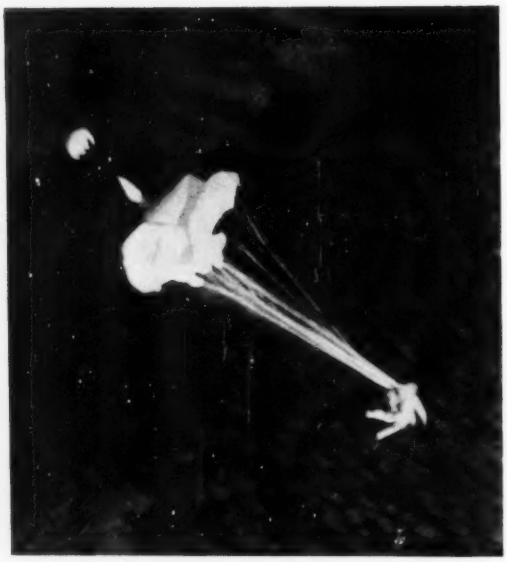
The German mark is worth about forty cents in our money inside Germany; outside the country the mark is almost valueless everywhere because the Germans have not been able to establish a favorable trade balance. Its export commerce is badly depleted and it is practically

The little village of St. Croix in Switzerland, near the frontier. It has been protected against invasion by the erection of concrete pill-boxes, artillery forts, machine gun nests, and planting the roads with dynamite. This bright little village receives a large part of its income from its community forests

Germany's over-cut of its forests by fifty per cent was sanctioned to meet an emergency—the need of stimulating internal business recovery, of carrying out programs of large scale employment, of providing for national defense, and finally of relieving Germany's wood situation made acute by depleted imports. It was expected that the over-cutting for the country as a whole would be temporary but now that war conditions have taken the stage, this over-cutting, it would appear, must necessarily not only continue but be increased because modern warfare calls for a tremendous use of wood on the warring fronts. Destroyed villages and bridges must be rebuilt either during or after the war. Railroads must be replaced, requiring great quantities of cross ties, bridge timbers and platform planks. Along the battle fronts enormous amounts of lumber, timber, stakes, poles and

on a barter basis. Its system of "ersatz" or substitution of materials has been productive of some results during its four-year plan, but there is no doubt that Germany is in a serious condition because of its unsound monetary system, its difficulty in paying for much needed raw material, the insufficiency of its domestic production and the serious over-cutting of its forests.

Germany is not alone in seeking to get the most out of its forests. There has likewise been an intensification of forest research in adjoining countries. In addition to the five new or expanded forest products laboratories in Germany at Eberswalde, Tharandt, Freiburg, Munich and Darmstadt, the Swiss government has recently established a new forest research institute at Solothurn and France in August completed a new institution of the same kind in Paris. England (*Continuing on page* 623)



At a signal from the pilot the aerial smokechaser jumps, feet first, two thousand feet above the forest

SMOKE JUMPING

The Smokechaser Takes to a Parachute in New Forest Service Experiment to Gain Greater Speed in Controlling Fires in Remote Western Areas

BY DAVID P. GODWIN

SPEED of attack is a prime factor in forest fire control. In the rugged back country of the western national forests, where the going is rough and distances are great, the importance of this vital element of elapsed time is accentuated. The time involved in getting one or more trained men on the scene of the fire is likely to determine the extent and damage of the burn. If from five to ten hours are required, as will be the case in many remote regions, a small fire may gain such headway as to become extremely destructive, even catastrophic. But if the burning hours are reduced, say to thirty or sixty minutes, the possibility of quick control and small damage is greatly enhanced.

From the very beginnings of forest fire control, men in the federal Forest Service have sought every possible means to reduce the span of travel time. From year to year transportation facilities have been extended. Great systems of roads and trails have been built and movement to a fire goes forward by foot, by horse and by motor. But there is a limit to these ground facilities and the elapsed time is still too great. Naturally, then, the next attack on the problem is through the air, and recent thought has turned towards study and experimentation in the uses of aircraft, and now with parachutes.

What has been accomplished, particularly in parachute jumping, this fall on the Chelan National Forest in northern Washington, while still in the experimental stage, is extremely encouraging. It has been demonstrated that fire fighters can be dispatched by aircraft and landed by parachute near small fires in rough, remote country.

Parachutes have been in use for several decades. In stunting and barnstorming and at large air shows thousands of successful landings have been made. Men and women for exhibition purposes have jumped from low altitudes and from unbelievably high altitudes. The thing has become something of a profession. This is the show business. But also there is the great universal use of packed parachutes as a safety device. Thousands are carried in military and commercial and private aircraft — but the number of these which are ever used must be infinitely small. In exhibition jumping the landing ground has been an airport or a flat field. Forced jumps in rough country are rare and if the jumper survives it is generally thought a stroke of good luck. In military manœuvers and in actual warfare the Russian and German armies have made many carefully premeditated mass jumps of armed men behind the enemy lines. But here again the job has been done over open, flat or rolling country. Steep, rugged, timbered terrain, spraddling out thousands of feet below, looks so frightful that few if any in the past have had the nerve to make plans and then deliberately jump into it. No record has been found of its having been done in such topography and cover as that found in the high back country of our western forested mountains. Such an act apparently would be considered madness or at least arrant recklessness.

Anything untried is fearful. But often, when tried, the thing doesn't look so bad after all. To their surprise, experienced parachute jumpers connected with this project found that trees were like springs and soon preferred

Descending at the rate of twelve feet a second, he maneuvers for a "feather bed landing" in the tree-tops

them to hard ground. Close stands of healthy lodgepole pine came to be referred to as "feather bed landings." It was also found that high altitude, with its thin air density, apparently is negligible as a factor increasing the rate of descent; so many other factors enter that a man jumping from 10,000 feet and landing on hard ground at 8,000 feet elevation comes down about as comfortably as at sea level.

In September the personnel connected with the aerial fire control project of the Forest Service was assigned the task of determining the feasibility of this new scheme. It was a natural sequence to the successfully established technique of dropping supplies from the air — now standard practice. If every variety of food supplies could be landed with some accuracy and a high degree of non-breakage, why shouldn't men.

So early in October the project group established a base at Winthrop, Washington, headquarters of a ranger district of the Chelan Forest. Winthrop was selected because it possesses an airport, rare in this mountainous section, and because it is the taking off point for a vast area of remote territory reaching northerly to the Canadian line. And remote territory is the only working ground on which this auxiliary aid, if proven, would be applicable. Its zones of effectiveness are limited by the reach of ground routes.

The project group split naturally into the plane crew — pilot and assistant; the jumping crew; parachute rigger and three or four jumpers; and finally the ground crew, composed of a leader with a tree climber and two CCC boys. For some days before and after arrival at Winthrop many dummies of various weights were dropped with condemned Army parachutes to gauge the drift, the damage to dummy and to parachute canopy, and to familiarize the group with the behavior of parachutes under varying influences of wind currents, altitude, cover and topography.

He makes it, slipping through the trees, while the canopy of the chute mantles the crowns, checking his fall

Hanging suspended about ten feet above the ground, the smoke jumper lowers himself by means of a rope

And here he is in his especially designed suit and helmet, ready to signal for his tools and attack the fire

Contract was entered into with an eastern parachute manufacturer to provide the services of a parachute rigger, professional jumpers, new type parachutes, two especially designed protective suits, and all necessary materials and equipment for servicing, packing and repair. The plane used was the Forest Service high wing Stinson Reliant monoplane, with 450 horsepower Wasp engine.

Sites were selected in various parts of the Winthrop ranger district so as to embrace the range of variety which might be encountered in forests of the Northwest. The order was arranged so that tests would be made in progressively difficult terrain — airport or fields, meadows at varying altitudes, open ridges from 4,000 to 7,000 feet elevations, brushy ridges level and on slopes, ridges with boulders and down timber, young growth from twenty to thirty feet high, open mature timber stands and, finally, heavy stands of mature timber.

The objective sought is the development of a technique whereby men, such as smokechasers, can be landed safely close to a newly started fire, suppress the fire, and later get back to headquarters

under their own power. It is therefore most important that the men eventually selected for this work be woodsmen and fire fighters of long experience. Obviously, to achieve this, it is wiser to train seasoned smokechasers to be parachute jumpers rather than attempt to train professional jumpers to be woodsmen. There is no thought of mass jumping or the delivery of large crews to big going fires.

As this is written the work has been in progress for a month, all personnel is exceptionally well qualified and experienced, and the record shows more than forty successful jumps, some by local smokechasers. The three injuries which have occurred, leg and back wrenches and cuts and bruises, happened in the air and were due to the arrangement of riser straps and shroud lines of the parachutes or to wrong position in leaving the plane. These faults have been corrected. In no single case has a man been hurt or strained in landing in the open or in trees.

The regulations of the Civil Aeronautics Authority include certain mandatory requirements as to premeditated parachute jumping. Parachutes must be inspected and packed by a licensed rigger; jumps must not be made from elevations less than 2,000 feet above the terrain; an emergency parachute — chest pack — must be carried in addition to the main parachute in the back pack.

The thirty-foot parachute used in the tests is of the latest design and provides, it is believed, the maximum in safety and manœuverability. The conventional dome of the canopy is surrounded by a wide scalloped periphery and two-pointed lobes or flaps for steering. When the guide lines of these two flaps are properly manipulated, the descending parachute can be turned right or left and the forward drift retarded or accelerated. Instant opening is secured through the use of a thirty-inch pilot chute which, when the rip cord is pulled, flies out immediately on small steel springs and pulls with it the apex of the main chute which snaps wide open and fills within about a second and a half.

The standard harness provided with the parachutes proved to be a great handicap in tree landings. When a man was hanging suspended from the crown of a tree the pressure on the leg and chest straps was so great that he found it impossible to unsnap the connections and free himself. But this was quickly corrected. Where heretofore the jumper's harness has been an integral part of the riser straps, the shroud lines and the canopy, it now has been made an individual unit, detachable from D rings on the riser straps. Upon landing in a tree the jumper passes his lowering rope through these D rings above his head, detaches the harness snaps and lowers himself in suit and harness. On the ground he can free himself from tackle and suit in less than a minute.

The original protective suits, though an excellent beginning in an uncharted field, required complete revision. They were of heavy duck and in one piece, padded inside over vital points with sponge rubber varying in thickness from a half to two inches. A ten-inch sole leather collar, lined with sponge rubber, opened in front and fastened on the left side with snaps. The suits opened in front from the left shoulder to the crotch by a zipper. The lower ends of the sleeves and pants were also split and closed by a zipper. Freedom in bending as well as arm and leg movements were greatly restricted.

The revised suit is two-piece, and made of lighter duck. The pants reach high above the natural waistline, fitting over the lower end of the jacket, and are supported over the shoulders by heavy elastic suspender bands. They zip open from waist band to feet. A large pocket is provided on the leg, between the ankle and knee, to hold the lowering rope. The jacket, which is closely belted above the hips, has a zipper opening from bottom to collar. The collar is high and made of slightly padded duck; and while it stands erect, it will bend easily forward or backward for visibility. The vulnerable spots only on both pieces of the suit are padded with layers of wool felt in order that the utmost freedom be permitted.

A well made football helmet is essential. Hinged over the face of this is a convex mask made of a mesh steel wire. A man fully turned out in this outfit is a fantastic thing, resembling somewhat a deep sea diver, but carrying the air of a monster from other worlds.

A detailed account of a jumping test would go something like this: By pre-arrangement the airplane crew knows the location of the target — which in this instance is a stand of mature lodgepole pine on a slope at 6,800 feet altitude. The ground crew has arrived at the location and built a smudge fire when the plane takes off from the Winthrop airport — elevation 1,700 feet — about twelve miles away. The plane, carrying two fully equipped jumpers, makes altitude and approaches 2,000 feet above the target and into the wind. A standard burlap parachute with a ten-pound weight is let go, through the manually operated hatch, at the moment the pilot believes right. This is the test chute and its drift and landing is observed by the air crew as the plane circles above.

The plane again approaches on the same or an altered course and, correction having been made, everything is ready to put out a jumper, who has moved into a sitting position in the open doorway with feet resting on the top rung of a steel ladder. Now he grasps the handle on the strut with his left hand and the doorway strap with his right, eases his feet onto the second and lowest rung. The engine is throttled down to seventy miles an hour and at a signal from the pilot, which he must obey in a split second, he jumps out feet first facing forward of the ship. When free of the plane — probably not more than twenty feet below — he pulls his rip cord. As the canopy snaps open he receives a heavy jolt and then swings down under it like a plumb bob. This new type of parachute canopy has greater stability than other types and oscillation of the rider is almost eliminated. The direction and velocity of the wind may have changed since the test chute was dropped and the correction may not have been so good.

He is descending at the rate of about twelve feet a second and has time to look up and observe the condition of his canopy and shroud lines and look down to locate his landing spot. He is facing the direction of his drift and, grasping the two guide lines, he can steer himself right or left to some degree. If he thinks he is overshooting his mark he can pull down both flaps above and behind him and somewhat retard his forward movement.

The timber below is fairly thick and swiftly his body goes down through the tops. The canopy mantles several of the crowns and they bend with the sudden pull, and with quick deceleration his descent is slowed to a stop and he bobs easily up and down, hanging suspended about ten feet above the ground. He can grasp some branches but there is no advantage there. He pulls his rope out of his leg pocket, passes the end up through a D ring on the riser strap above his head, brings it down and makes it fast to a connection on his own harness. Then he hoists himself with his arms until the connecting straps are slack, unsnaps them, and by slowly paying out the lowering line comes (*Continuing on page* 621)

CHRISTMAS EVE IN THE NORTH WOODS

By
HAZEL METZNER

The sentinel pines rise proudly toward the stars on this holy night, and all is peace in the still winter woods

THERE is a strange beauty in the quiet remoteness of the North Woods. The tempo of life that moves through its forest aisles and in its tangled thickets, that roams its slashings and vast cedar and tamarack swamps, is slow and peaceful. Just as the growth of the North Woods itself is slow, steady and peaceful. And over and through it all there is a simplicity that is our nearest approach to Christ-like. A simplicity that, on the holy night of Christmas, spreads a halo of consecration over all.

Quicksilver stars flicker in the early twilight. To the barren branches of the birch and poplar, their delicate tracery outlined like etchings against the pale sky, come "patridge" by twos and threes to partake of their evening meal. In peace and quiet they bud until their little crops are crammed; then, with a contented cluck and a soft whir of wings, they are off to the warmth and protection of a balsam thicket for the night.

Down from his perch in a young cherry tree lumbers the fat porcupine. All afternoon, in the warm sunshine, he has stuffed himself with tender bark and now, with unhurried tread, he waddles to his den in a hollow log, leaving his blurry tracks in the snow.

The last streak of fire drains from the western sky and the deep indigo of night spreads its tent over the dark and quiet wilderness. Stars now burn steadily and with increasing brightness. Dark tips of pines reach toward the heaven with uplifted arms, praise and rejoicing in their attitude. "Hosanna," they seem to murmur, "Hosanna, to the highest. . . ."

Porky waddles through the snow to his hollow log

In the long, log barn at Nick Seegan's logging Camp 7, horses fill the stalls as teamsters go about their evening chores. The odors of harness leather and the warm bodies of the animals mingle with those of fragrant hay and musky grain. It is the evening meal, rest, and contentment after the day's work.

Mike Willette is the last to leave. Everything must be right with his big roans, George and Jolly, before he leaves for the night. An extra measure of oats, a sprig of cedar braided in each mane, and a loving slap on sleek flanks.

"How you spendin' Christmas Eve, Mike?" asks Frank Barney, the barn boss, as the teamster finally checks out through the feed room office.

The hare appears — a shadow against the whiteness of the snow

"Me? Oh, I go to town — maybe buy Christmas present for Widow St. Peter's keeds. Her man, she killed last year when beg log roll off jammer and break hes neck. Maybe, too, I go to mass—give Father Bonnie leetle money. Frank, you give that George and Jolly good breakfast, eh? Christmas Day. Dem one dam good horses, Frank."

As the stars shine brighter, the varying hare bestirs himself and comes forth from the protecting branches of a drooping evergreen. Silently and leisurely he hops down the beaten runway to a rendezvous with companions at a fallen log. A white shadow against the unbelievable whiteness of snow, only his twitching nose and sensitive ears belie his presence as he chews and chews at the bitter cedar. He is deep in his feast as the stars draw closer to earth. And all is peace in the still winter woods.

(*Continuing on page* 620)

Pine Tree Banker Pomeroy

PINE-TREE BANKERS

By SAMUEL LUBELL
and
AL POLLARD

LESLIE K. POMEROY was twenty-eight and Eugene P. Connor a year older when they set out to revolutionize the southern lumbering industry. Wild, quixotic, seemed their venture. Today, fourteen years later, the movement they launched—pine-tree "banking"—holds new promise for prosperity in the South. Their pine-tree "bank" in the tiny town of Wilmar in southeastern Arkansas has become famed among foresters and lumbermen, and their "sustained yield" plan of lumbering has converted farmers and scores of lumbermen from tree destroyers to tree investors.

"Sustained yield" means cutting only as much timber as normal growth replaces every year, in contrast with the old American custom of mowing forests down. Pomeroy and Connor have checked timber devastation on thousands of acres, and have saved whole communities from becoming ghost lumbering towns. But more important, these practical foresters have demonstrated what few conservationists dreamed possible; they have proved, against the toughest commercial odds, that more money can be made through sustained yield than by ruthless "cut and get out" methods.

In 1925 Pomeroy and Connor, close friends, were working for a Wisconsin lumbering company. Theirs was a musketeer friendship. They had gone to the University of Wisconsin and had worked together at the Forest Products Laboratory in Madison. They liked lumbering but hated the wanton destruction of trees that went with it.

With borrowed money they bought an abandoned sawmill and 160 acres of second growth timber in Wilmar, then a ghost lumbering town without electricity or running water. Unable to finance "railroad logging" —which to be profitable requires cuttings of at least

Starting in a small way, Pomeroy and Connor — who operate as The Ozark Badger Lumber Company — have acquired forests of their own and in addition are managing the timber of hundreds of their farmer neighbors by selective cutting methods. This view shows some of their holdings

Cut Your Trees and Have Them Too — Is A Paradox That Pays Dividends to Southern Lumbermen . . . . . .

And His Partner Connor

4,000 board feet to the acre, they used motor trucks, which would economically haul as little as 500 board feet, or three or four trees to the acre. Thus they could afford to cut fewer trees, and select with greater care the most suitable trees.

With the profits from their small sawmill, the young men bought several thousand acres of fine timber. Still, they never could buy enough to keep their mill going under their conservative cutting plans. All around them the woodlands of small farmers (who own forty-two per cent of all forests in the South) were being gutted by the big lumbering companies. Once denuded, those lands wouldn't bear salable timber for thirty years. To curb this waste, and at the same time to obtain lumber for their sawmill, Pomeroy and Connor devised a system of pine-tree "banking."

The plan is simple. Take a typical "depositor"—Mrs. Rolf Anderson, a widow, with 300 acres of timber. Mrs. Anderson agrees to sell whatever timber is cut from her land to Pomeroy and Connor at the market price. In return they manage her woodland for sustained yield as they would their own. When Mrs. Anderson needs a little money, Pomeroy and Connor cut a few of her pines and send her a check. In two years she has received $350. Cutting more trees than the maximum set by the sustained yield plan is not permitted and consequently her stand of trees, once in poor condition, has been improved and Mrs. Anderson is counting upon it to put her oldest son through college.

Pomeroy and Connor have several hundred farmer "depositors" like Mrs. Anderson. Each farmer decides when his quota of trees is to be cut. With a good stand he can figure on a yearly "interest" of about $2 an acre. For that $2 he doesn't do a thing but let his trees grow—he has no crop to plant, no seed or fertilizer to buy. It's as easy as clipping coupons from gilt-edge bonds.

One farmer wanted $6.50 an acre for all the timber on his land stripped bare. Pomeroy and Connor persuaded him to invest his trees. In eight years he received $8.50 an acre for the timber and more for his work cutting the logs. The stand is now so thick that the farmer could clip another coupon tomorrow.

Another "depositor" has a forty-acre tract which he calls "my tax reserve." He meets his annual tax bills which run to around $100 by drawing on his timber. Other landowners regard their trees as money in the bank to be kept for emergencies like sickness or crop failure.

The fervor with which

An example of eating your cake and having it, too — a Pomeroy and Connor forest after selective logging. This tract has yielded 8,500 feet an acre since 1929 and still contains 6,000 feet an acre of thrifty, fast-growing trees that will soon provide another selective cut

Cutting low stumps — one of many ways to increase the yield

Upon maturity, a tree is removed to give growing space to younger trees

The use of trucks for hauling logs makes selective logging possible

these farmers have taken to tree thrift is in astonishing contrast to their old habits. Of one man it used to be said that "when he goes through a forest he doesn't leave shade for a baby." In 1928 he was converted to pine-tree "banking." Since then he has averaged more than $200 a year from his 300 acres; that same land, slashed clean years ago, had brought his father $150. Two years ago, stricken with appendicitis, this farmer refused to be operated upon until a lawyer could be brought from town.

"I want you to write into my will a provision that my trees are always to be logged under the sustained yield method," he told the lawyer.

Naturally, most of the farmers were skeptical in the beginning; Pomeroy and Connor first had to prove their theories on their own land. The acid test came during the depression; lumber prices collapsed, cash dried up, and they had to battle desperately to keep from over cutting on the forest they had built up so patiently. They limited themselves to one meal a day, they borrowed from friends, tried in vain to obtain a loan from the RFC. At that time their timber holdings weren't considered good enough collateral.

When things grew blackest the young foresters took refuge in their woods. There, they could run eyes up along clean-limbed stems 100 feet into the sky, and see leafy crowns swaying the heartwood into finer, more resistant lumber. Their pockets might be empty but they could always console themselves with the sight of pines bursting with growth. Today, the pine-tree "bank" on which they staked everything is richer and thicker than ever—a form of wealth that is unfailing.

(*Continuing on page* 622)

THE COOPERATIVE FOREST RESTORATION BILL

By

HENRY S. GRAVES

A NEW measure for federal cooperation with private owners of forest land, cited as the Cooperative Forest Restoration Bill, was introduced in the last session of Congress. Endorsed by the Forest Service, it may be expected to form a feature of the revised program of national forestry. Already, current discussion indicates strong approval by some and equally strong opposition by others.

The provisions of the bill were summarized in AMERICAN FORESTS for September, 1939. A clarification of its basic purposes and the circumstances under which it may be applied will help in appraising the measure. It should be recalled that this is only one of several methods of federal cooperation with private owners, either now in effect or proposed. Application of this measure is restricted to circumstances where national interest justifies public assistance and where other methods of cooperation are neither feasible nor effective.

The broad objective of the bill is to contribute to the rehabilitation of those areas of the country, predominantly best suited to forest production, where the timber has been depleted, where industrial activities in the forest have largely ceased, and where a considerable proportion of the population is receiving federal aid in some form. The land is owned in part by industrialists in relatively large tracts and in part by farmers. Depletion of the forest and the long continued depression in agriculture have resulted in financial embarrassment of land owners, chronic tax delinquency, and actual or threatened breakdown of local economic life.

The aggregate area of land where forest depletion or destruction has brought serious economic conditions to the local population bulks large. The plight of the local people drives home an appreciation of the urgency for some plan of public aid to meet the employment problem and at the same time help restore the forests as a basis for stable economic life. The Forest Restoration Bill seeks to accomplish this desirable end by providing Congressional authority for the federal government to lease private lands and to engage directly or indirectly through the states in managing the properties for forest productivity. Federal expenditures would constitute a lien upon the properties to be liquidated by receipts from sales of forest products as grown. The restoration, maintenance, and operation of the forests, made possible by federal participation and supervision, would presumably provide immediate employment. Such public aid, it is to be assumed, would be extended only through a sufficient period to rehabilitate the land resources and to enable private ownership and enterprise to carry on without help.

Fundamentally, a new type of forest credit is here proposed. Instead of lending money for long terms to tide over the owner pending the growth of forest stands to merchantable size, the government would manage and improve the property during a period specified in a long-time lease. Thus the government would furnish the working capital, returning to the owner any surplus receipts over and above the amount of expenditures allowed by the terms of the lease. All allowable expenditures not covered by receipts would constitute a lien on the property and would have to be paid by the owner before he may recover full title to the land. Farmers and other small proprietors are given special consideration through an allowance of 500 acres on which reimbursement of only fifty per cent of expenditures is required. The bill provides for ultimate sale of properties which are not redeemed by the owner, and the government may acquire the land and protect its investment by continuing the operation for a maximum of twenty years. Before the expiration of twenty years, the government must "sell or otherwise dispose" of the property, thus avoiding the use of this bill as an aid to federal acquisition of forests.

The expectation that the government will recover most of its expenditures in managing and improving the land, places the enterprise in the category of a self-liquidating project. The expenditures for which the government will not be fully reimbursed, including some of the administrative costs and those to be incurred under the 500 acre partial exemption clause, may be regarded as justifiable contributions to general community welfare.

The government assumes full responsibility for management of the properties under lease, but to secure a measure of local participation in the undertaking, provision is made for the Secretary of Agriculture to appoint state advisory committees, charged with the task of working out a program, subject to approval or modification by the Secretary, defining the areas, to be called "forest restoration units," where the plan may be applied. Membership would include the principal state officials concerned with land use and forestry, together with three non-official residents. Thus the initial steps in a given state are to be taken by local officials after conference with local citizens. The bill also requires the Forest Service to operate in "conjunction" with state officials and agencies. To further assure local participation, each state committee must appoint county advisory committees of five, whose approval is necessary before completing the lease or cooperative agreement for any restoration unit.

After extended study, I have reached the conclusion that the bill contains definite limitations, the practical application of which would prevent the large scale achievement of the purposes of its authors. The first limitation is the self-liquidating feature. In practice the government would necessarily restrict its leases to forests whose character and condition promise enough money returns during a specified period to cover operating expenditures. The area that will meet this requirement is likely, in my opinion, to prove much smaller than has been predicted.

The bill obviously would not apply to forest areas now largely devastated by cutting and fire. The restoration of such areas requires very long periods of time and usually involves extensive planting or other measures beyond the power of private owners. Such lands constitute a public problem. In these areas economic distress is undoubtedly greatest, but the present proposal offers no real relief. Its solution calls for extensive public ownership.

It is to be presumed that there is no intention to apply the measure to sections where timber is still in abundance or where owners may reasonably be expected to hold their lands until market conditions will permit the resumption of normal industrial activities. After all, other forms of cooperative help are available for owners who are temporarily embarrassed.

This leaves available to the bill cut-over lands whose soil is naturally good with a fairly rapid rate of growth and with stands of second growth which if properly handled may be expected to reach merchantable size within two or three decades. Such lands, together with scattered groups of larger trees and individual trees left after the original cuttings, can provide a basis of returns capable of covering expenses during the period of government management. I believe there are many areas of this character that would meet the requirements of successful management necessary under the terms of the Forest Restoration Bill. I doubt, however, if their aggregate area would constitute a large proportion of the forest regions where public aid is needed.

The self-liquidating provision of the bill, then, clearly limits the extent of needed work which can be done in forest rehabilitation, and accordingly the amount of labor which can be employed. Moreover, in the regions to which the measure could be applied, the urgent need for relief employment is probably much greater than could be supplied through a self-liquidating enterprise. This means that the need for additional public expenditures for relief would continue in the forest restoration units.

One reason for the proposed leasing plan is to enable the government to spend money for relief on private lands. Under the leasing bill, however, the Forest Service expenditures are limited to amounts which may be returned to the Treasury in cash. Exceptions to this are general overhead expenses and the 500 acre exemption clause. I believe, therefore, that expectations regarding the results in forest restoration or in providing employment should not be placed too high.

How extensively private owners will voluntarily lease their lands to the government on a long-time basis is unknown. The bill permits an owner to terminate the lease at any time upon payment to the government of any reimbursement that may be due. It is possible that some would count on doing this in a comparatively short period if business picks up. On the other hand, owners may be reluctant to surrender management of their lands to the government and assume responsibility to pay for forest restoration activities that they themselves might not undertake.

One may also question the cumbersome procedures of the bill. Considerable time will be required to appoint the state and county committees. Thereafter, it will take time and field trips to determine the restoration prospects, negotiate with owners, examine individual tracts prior to lease, adjust the tax burden which should be assumed by the woodland, and the like. At best the undertaking would move slowly. This and other circumstances give it the character of a long-range project in advancing forestry rather than one calculated immediately to relieve an employment situation.

These comments point chiefly to results that might be achieved by the measure. Most questionable, however, is the principle under which the federal government would assume responsibility for the management of private property and private industrial enterprise. This is very different from public management of publicly owned forests. Public control may be exercised over certain classes of property, but I believe that actual management should rest with the owners. The leasing and managing of lands for research and demonstration, or arrangements for the exchange of scattered private lands within national forest units are reasonable exceptions, but the plan proposed in the Forest Restoration Bill would make the government responsible for managing private lands. This seems to me an unwise principle.

When one criticizes a proposal such as the Forest Restoration Bill, it is incumbent on him to suggest at least an approach to some other method of meeting the important public problems involved. As a premise, I have grave doubts as to whether it is possible to devise a plan by which cash returns are self-liquidating to the Treasury in a limited period to cover expenditures for emergency relief and for the rehabilitation of depleted private forests. I believe, however, the purposes of the Forest Restoration Bill can be achieved through other methods already available or that have been approved in principle by the majority of those interested in forestry.

My first suggestion would be to broaden the program of public acquisition to include areas which would naturally be included within forest restoration units (to borrow a term from the bill now under discussion). These public forests would provide opportunities for constructive relief work. They would serve as centers for other cooperative devices in aid of farmers and other owners. Many of these are covered by legislative authority, though not by federal appropriations.

Appreciating that an advantage claimed for the Forest Restoration Bill is toward continuing private ownership in regions requiring public help, I believe that greater progress in stabilizing ownership will be made if portions of the specified units are in public ownership. I would combine the public forest feature with all appropriate methods of public cooperation to the end that a plan may be carried out for reconstructing the economic life within the specified restoration units. This would apply not merely to forest land but to all classes of land. With a national forest as a nucleus, all agencies, including the Forest Service, would be authorized to give cooperative aid to farmers and other land owners. Thus their efforts would be pooled in a common undertaking governed by a common constructive plan. The leasing of tracts might prove desirable in meeting some situations, but the feature of leasing would be supplemental to other devices and sec- (*Continuing on page* 620)

BAGGING GAME LAW VIOLATORS

By W. E. CROUCH

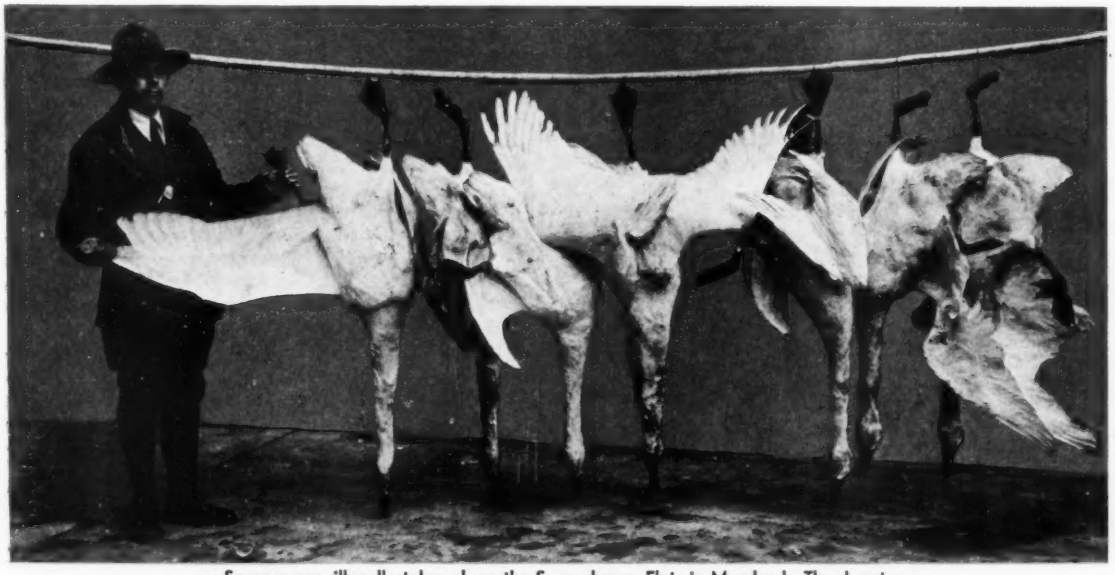
Photographs by the Biological Survey

A patrol boat speeds along the waters near Smith Island, Maryland, and an agent keeps a sharp eye out for violators.—The badge at right saved the life of an agent by deflecting the bullet that was intended for his heart

THE annals of crime are replete with stories of intelligent, educated individuals who have tried to fool the law. Psychologists probably can explain the behavior of these criminals. To me, however, one type of violator will always remain a mystery—the intelligent, educated, and otherwise honest man who believes he can defy the game laws and get away with it. Why does he expect to fool the law? Why does he wish to do so? Is it because he is greedy? Or merely because he "thinks he's smart?"

As Chief of the Game Management Agents of the U. S. Bureau of Biological Survey, I review hundreds of federal game-law cases each month. Many of the offenders are men who undoubtedly would not knowingly commit other crimes. Many violations, of course, are committed by individuals who would stop at nothing to gain what seems to be "easy" money or some special privilege.

The average citizen who is only casually acquainted with the work of the game management agents thinks



Seven swans, illegally taken along the Susquehanna Flats in Maryland. The deputy game agents arrested the hunters and sent the birds to a veterans hospital

their activities are confined to apprehending duck bootleggers and hunters who kill too many wild ducks, geese, or mourning doves. This is only a part of our work.

On my desk in the course of a day, I find a report from Alaska stating that two wildlife agents of the Alaska Game Commission spotted fur-trapping violations while flying in their plane on a tour of inspection. Another report shows that the wildlife agents and Canadian provincial police cooperated in a raid that broke up a smuggling ring on the international boundary. An agent from New Orleans cites evidence against woodcock hunters in Louisiana, another from New York reports a fur-smuggler from Montana, and a third in California discusses details of a talk he will deliver to a group of sportsmen in San Francisco.

The federal game agent examines closely permits and papers of prospective hunters, which in this case complied fully with the law

A case of violation, detected by a federal game agent and a state warden in Texas — sixty upland plovers on the side of one car! Three men were caught with the birds and the state court fines totaled $183

A swivel, or scow gun taken from "duck" bootleggers along the Eastern Shore. One shot from this type gun can kill or wound a hundred birds on the water

An agent's job is to protect all wildlife within the limits of federal statutes and to get the public to understand the needs for the laws enacted by Congress. Specifically, a federal game management agent is charged with the enforcement of four federal laws: The Migratory Bird Treaty Act, passed in 1918 and amended in 1936, for the protection of all birds migrating between Canada, the United States, and Mexico; the Lacey Act, passed in 1900, and amended in 1935 and again in 1939, which regulates interstate shipments and foreign commerce in wild animals; the Migratory Bird Conservation Act of 1929 authorizing the establishment of bird refuges as inviolate sanctuaries; and the Migratory Bird Hunting Stamp Act, passed in 1934, to raise funds for migratory waterfowl refuges.

Of great interest to the general public are the arrests made under the Migratory Bird Treaty Act. These are the more exciting tales—the stories of bootleggers, undercover operators, wild chases down country lanes, and dangerous skirmishes in lonely marshes on dark nights. But more of that later.

Law enforcement officers of the Biological Survey discover an illegal duck trap on Chesconessex Marsh, in Virginia

Through the Migratory Bird Treaty Act, the federal government regulates the number of birds taken annually. Parenthetically it may be stated that federal migratory waterfowl hunting regulations are based upon extensive studies conducted throughout the year by expert observers of the Biological Survey. These scientists are literally with the birds from day to day. When the birds are north, the flyway biologists are in Canada watching conditions there; when the birds migrate, the experts accompany them; and when the waterfowl are in the southern states or in Mexico, the Survey men are also on the grounds. The reports of these scientists and the results of the annual waterfowl inventories conducted by Biological Survey observers are the basis for recommendations made for migratory bird hunting regulations.

The Lacey Act authorizes federal agents to arrest individuals who have violated a State game law and then have transported the game or valuable furs across a State line. State officials have welcomed this law, for it helps their wardens to apprehend men out of their own reach. When a lawbreaker steps into another State, the State warden is helpless. Extradition is often an involved process. Federal agents operating under the Lacey Act, however, may apprehend a state law violator for interstate shipment of game. This procedure saves the government both time and money and discourages activities that otherwise might develop into rackets. Through this Act, federal game management agents have smashed several fur-smuggling rings.

The Migratory Bird Hunting Stamp Act, of 1934, was passed by Congress to aid in the establishment of migratory bird sanctuaries administered by the Biological Survey. Every hunter more than sixteen years old must possess one of these $1 "duck" stamps when hunting migratory waterfowl. Because the hunters' money is used to protect the breeding stock of birds, the majority of sportsmen respect the law. In 1939, more than 1,000,000 stamps were sold. Unfortunately, we occasionally find a "chiseler" who insists upon hunting without a "duck" stamp. Last year eighty-seven persons were convicted for this offense, and their fines totaled $609, an average of $7 each.

Almost all national wildlife refuges are inviolate sanctuaries. Nevertheless, each year poachers attempt to hunt on these areas. Arrests are usually made by refuge personnel, and the cases are reported through the regular channels by a game agent assigned to that region.

Importations of foreign birds and mammals also are regulated under the Lacey Act. Last year, 1,791 permits were issued for the importation of exotic species. A total of 252,628 foreign birds were brought into continental United States in 1938-39, including 121,000 canaries, 2,800 parrots, 87,500 Mexican quails, 14,500 Hungarian partridges, 400 pheasants, and 26,500 miscellaneous birds. These birds are shipped from all parts of the world. Mammal importations included apes from Africa, gibbons from Singapore, a pangolin from Sumatra (said to be the first of these animals ever brought alive to the United States), a tigerlion, a giant panda from China, and two (*Continuing on page* 608)

A night club which was closed and its owner sent to Leavenworth for thirteen months for serving wild duck dinners

CHEFS OF THE TALL TIMBER

By

STEWART H. HOLBROOK

Even "Oscar" of the Waldorf might pick up a few tricks here. Cook and flunkies in a Montana lumber camp in the early 1900's

THE time Sigurd (Bat) Nelson left us flat it put Paul in a tough spot. Paul was the camp foreman and you just can't run a logging camp without a good cook. Bat was an extraordinarily good cook, but this time he left a 200-man crew at Hemlock Bay without notice.

That wasn't right. It took two weeks to get a new man from Vancouver and camp ethics always called for that much notice. "Dirty trick," Paul said. "What we going to do?" He and I, with the two cookhouse flunkies —both young lads—and Okay Fuller were in the camp office.

"Humph," said Okay, "if all you need is a cook you jes' give me a couple of them new aprons and I'll show you stiffs some real broilin' and sizzlin'."

"Where'd you ever cook?" Paul was blunt and incredulous.

"Me? I cooked more grub than you could shovel in ten years. I cooked on the Muskegon in Michigan, I cooked out of Rice Lake, Minnesota, and all the way in between to Puget Sound."

"But how do I know . . .," Paul began.

"Give me them new aprons," Okay fairly shouted, "and I'll do you some neat sizzlin'."

Paul took a box down off the office shelf and handed two snowy white aprons to Okay. He tucked them under an arm and started for the cookhouse. "Come on, you cookees," he yelled at the flunkies. "Let's ramble into the Waldorf."

It was taking a big chance to let Okay into the kitchen. He was the camp bullcook and a bullcook has nothing to do with cooking. He is the camp chore boy. He got his name many years ago in the days of oxen—bulls—when his duties included shaking out the baled hay and mixing the grain for the animals. The oxen passed on but the bullcook retained his title and his job of sweeping out the shacks, cutting the fuel wood, filling the lamps and such odd jobs.

Okay was in his late sixties, short and broad, and wore a beard in the General Grant manner. He was a very positive personality, gruff and a little aggressive. During that first afternoon I heard him shouting orders in the cookhouse and saw him, looking strange in his white apron, stoking wood into the big ranges. He seemed to be happy. At about five twenty-five in the afternoon he stepped out onto the kitchen stoop, a short iron bar in his hand.

The sun was just dropping behind the mountain in a blaze of glory. It made a striking picture—Okay, resplendent in white there, against the barn-red of the cookhouse and a tremendous background of deep green, composed of Douglas fir that reared more than two hundred feet toward the cloudless sky.

Okay stood close to the triangular bar of iron that was suspended outside the cookhouse door. This was the conventional gut-hammer, the dinner gong. Okay took a big silver watch from his pocket and stood looking down at it. When the second hand had made its last revolution within the half-hour, he struck the gong a single lusty blow.

Down through the long rows of bunkhouses pealed

that one magnificent note, deep and vibrant. It passed on through camp, and on through the forest until it struck the mountainside. Then it came back in echo. It was a great moment and Okay seemed to grow a full inch in stature.

Once the echo returned, Okay started his tune. All camp cooks used to pride themselves on the way they hammered the gong, and they displayed various techniques. Okay began his tune with a leisurely movement, three sustained notes that seemed to be calling attention to what was to follow, a sort of prelude. When the third note was barely dying, he went into a roulade. Faster and faster he beat the vibrating triangle until lamps danced on bunkhouse tables, the stovepipes shivered, and the very mountain seemed to quiver. Continuing in a frenzy for a few seconds, Okay went into a veritable Verdi crash that left my ears ringing. Then he put his baton away and went inside.

It was, as Paul remarked with some amazement, a mighty pretty piece of hammering. Two hundred loggers were streaming into the cookhouse to see what a tramp bullcook could do as a chef.

I don't think a crew ever was more surprised. The biscuits were excellent. The mince pies, hot from the oven, had a brittle brown crust. But it was the roast beef that caused unusual talk. It had a wholly different flavor. Weeks afterward I got Okay to tell me how he did it. "I jes' rub the roast all over with plenty sugar," he said. "And the las' fifteen minutes in the oven I put the heat to her like she was a blast furnace. Give her the works. Try to burn her a mite on the outside. Sugar and heat does it."

If any skeptical housewife will try Okay's method just once, I'm sure she will continue it. No roast beef can touch it cooked that way.

Okay's later surprise was the mulligan. When I sat down to the table that night I knew it was going to be different from any other mulligan. The aroma told me so, and it was. Mulligan is no novelty in a logging camp, but no such beef stew as Okay's had ever been tasted by lumberjacks. He said it was no grand secret that made his stew fit for gods. It was the leaf of the bay tree that worked his magic. I have since marveled about bay. Although it is known, by name at least, to most American housewives, it is strange how few of them have ever used this majestic herb which turns the most insipid stew into a noble dish.

Later, in the Oregon timber, I ran across perhaps half a dozen camp cooks who used the next thing to bay—leaves of the Oregon myrtle. But bay is better. Today I know several camp cooks who carry a bag of it with them from camp to camp. Lumber companies seem not to have heard of it.

I believe that not only American women but many professional male cooks in restaurants and hotels could learn a great deal from the chefs of the logging woods. Even the fabulous Oscar of the Waldorf might pick up a few tricks. I doubt there is a race of cookery artists on earth to compare, day in and out, with logging camp chefs. I say artists because these men of the timber take

A typical Waldorf kitchen of the tall timbers, back in the heyday of Minnesota lumbering. Cooks of those days have handed down some recipes that American housewives might well try. The author gives a few

vast pride in their work and they achieve wonders, often with the crudest sort of materials and equipment. One such artist was Alex Couture, originally from the Province of Quebec, who ranged the timber from coast to coast. All of Alex' work was good. He stood out as unique, though, because of his *lapin frit,* which is to say, fried rabbit.

Rabbits fried or otherwise are seldom met with in a logging camp because of the lumberjacks' silly prejudice against eating them. The *lapin frit* of Alexander Marie Baptiste Couture never failed to remove such prejudice. Before he left one spring I got Alex to set down in his own hand and language the recipe he used. Here is a literal translation:

"Recipe of the Rabbit to the Wine White or the Wine Red—by A. Couture: Some slices of lard, some butter, some onions, a little oil, and put the all in a pot. Cut then the rabbit into small pieces and put it with the rest. When that it is frying add two tablespoons of flour and well rouse [stir] the whole. Next, add one quart of wine white or wine red, some parsley, and a leaf of bay; some salt and pepper. Make it to cook on a fire very slowly. Empty it on a plate and then it eat. There, my friend, you have a recipe in the true French."

Alex used wine that he himself had bought. If wine was not available, he said, the next best thing was to "rub well the *lapin* all over with white sugar" before putting in into the fat.

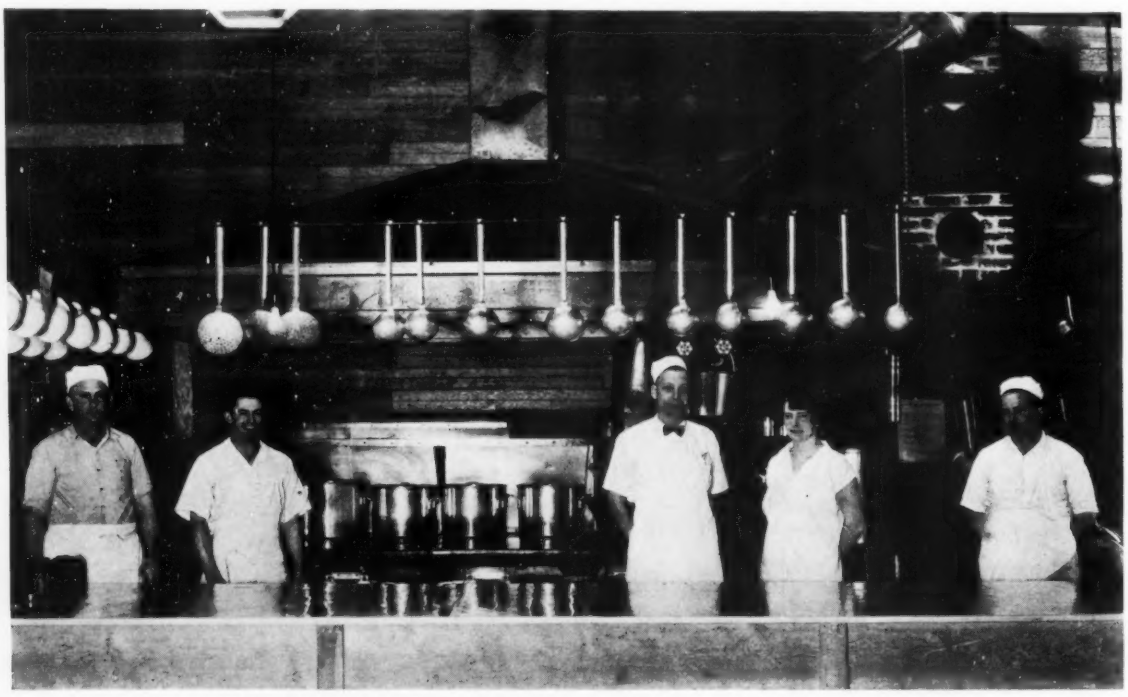
Most any French-Canadian cook can produce a better pea soup than can be had in the highest toned restaurant. The pea soup of Alex Couture was tops. His family-size recipe called for two cups of split peas. Soak from two to three hours. Add one medium sized onion, diced. Then pepper to taste, and put in a quarter pound of salt pork, cut fine. ("Always mak sure hav' nuff pork," Alex warned me.) Now boil and when you think it is done, boil it two hours longer. Alex put great stress on boiling. Never less than five hours. Pea soup of a delicate flavor, he said, cannot be made under seven hours—two hours soaking, five hours boiling.

That noble branch of the lily family called garlic was introduced to us at Hemlock Bay not by a Latin but by one George Kipp, a Cockney with a fearful accent who until his recent death was rated one of the top camp cooks in Pacific Coast timber.

I regret much that most Americans think of garlic as a weed used only by long-haired Socialists and other undesirable "foreigners." All this is too bad and is doubtless the reason why few American males will touch a green salad unless forced to by politeness. The very first green salad I ever ate and liked was produced by this garlic-loving George Kipp in the wilds of British Columbia. A taste told me here was something unusual.

The base of George's dressing—and here, it appears, is a most important thing—was wine vinegar. George eschewed all cider and malt vinegars for dressings. Wine vinegar or nothing, he said. To this he added several cloves of garlic, some paprika, salt, and white sugar. He shook it well and let it stand for an hour or so. He then added olive oil, shook it well again, and served. When I asked him how much of the various condiments he used, George replied that measurements in cooking trammeled a man. A real cook, he said, needed only to know what ingredients; his taste told him how much of each.

A year-round delight at George Kipp's table was the finest bread imaginable. Many a present-day cook learned his bread from George. Here is a family-size recipe for Kipp bread, as served in some of the best logging camps: "Eight rounded cups sifted flour; one rounded tablespoon salt; (*Continuing on page* 619)



Modern logging camp kitchen—photographed in western Oregon. What a contrast in quarters and equipment to the days when the masters of the art of "broilin' and sizzlin'" worked under the crudest of conditions

EDITORIAL

SILENCE ON THE UPSTREAM WATER FRONT

THINGS are not going well on the upstream water front. Two years ago, it will be recalled, Congress recognized the long advanced claims of forest and soil conservationists as to what they could accomplish in helping to control floods by the application of conservation measures to upstream watersheds. This recognition was definite and obligatory. The 1938 flood control act made available $7,000,000 for the Department of Agriculture's experts to go to work and show what they could do in developing an upstream flood control program and implementing it with the downstream work of the Army on the watersheds of approved flood control projects. Of the fund provided, $3,000,000 was for examinations and surveys to determine applicable upstream measures and $4,000,000 for the prosecution of work determined desirable.

The action by Congress was widely acclaimed. Commenting on it editorially at the time, this column said: "It means that advocates of upstream water control through well applied conservation measures have at last won their fight and that their claims now have been brought to the test. It means that conservation, as represented by the Department of Agriculture which is responsible for the expenditure of this $7,000,000 of public funds dedicated to the management of little rivers, is on the spot to make good the claims and to demonstrate the place and efficacy of watershed conservation in flood control."

When Secretary Wallace reorganized his Department and provided for coordinated bureau handling of this upstream conservation opportunity by the Bureau of Agricultural Economics, the Forest Service and the Soil Conservation Service, the public rightly was encouraged to expect that the opportunity would be promptly and competently met. Two years have passed, however, and nothing but silence has come from the Department's water front. An effort to determine and appraise what has been done leaves one with the conviction that the project has been stymied by departmental red tape, lack of clear-cut direction, bureau disagreements, debates and other internal troubles too complicated to fathom. The fact that stands clear, however, is that two years has passed and the Department's program has not yet been formulated. Five hundred men have been employed on surveys and overhead but no surveys have been completed; hence no work has been done on any watershed except that after southern California's fires of 1938 some $25,000 was spent in sowing mustard seeds on burned over areas.

How does Secretary Wallace square this situation with a Department supposed to be streamlined for teamwork, action and results? The editorial, already referred to, published shortly after passage of the act, concluded with an observation which it seems timely to repeat: "Results or lack of results when expenditure of the $7,000,000 has been made may be instrumental in making or breaking watershed conservation in flood control."

SMOKECHASERS NOW HAVE WINGS

SMOKECHASERS, the begrimed and hardened woodsmen who form the fire-fighting shock troops on the far-flung forest front of the West, now have wings. And in this fact, it would seem, the prayer of forest administrators for speed and more speed in getting men against flames once they are discovered may be realized. At least the experiment now being conducted by the federal Forest Service in the timbered hinterlands of the Chelan National Forest, in Washington, described fully on page 590 of this issue, points to a highly successful initial step in this direction.

By means of the modern parachute and a refined jumping technique which permits landings in rugged, timbered terrain, smokechasers during the experiment were enabled to attack within thirty minutes a fire which, under present conditions of ground travel, would have required eight to ten hours to reach. When it is considered that few forest fires in rugged western country reach dangerous proportions within an hour or so after discovery, that the time involved in getting men and equipment on the job usually spells the difference between quick suppression and a destructive, uncontrollable conflagration, the significance of this dramatic experiment is clear.

It is too early, of course, to assign the parachute jumping smokechaser a definite place in the system of forest fire control now in force. By the very reason of its significance, the new technique is fraught with problems, not the least of which is the hazard to life and limb which the aerial smokechaser must face every time he drops into the tree-tops. The fact that over forty experimenting fire-fighters have landed without injury indicates that this phase may be solved, but only under conditions of adequate training and carefully planned jumps by one or two men. Mass jumping in the delivery of large crews to big fires, as dramatic as it might seem, is not the purpose of this experiment. The objective is to deliver the smokechaser and his tools on the scene of a fire as quickly as aircraft and parachute can get him there. Should this be accomplished, many of the big fires now destined for newspaper headlines in the years ahead may never happen.

In searching every device and technique of the new age for more effective weapons with which to battle the fire enemy, the Forest Service is to be commended.

RED SPRUCE

***Picea rubra*, Link**

By G. H. COLLINGWOOD

THE narrow, dark yellow-green crowns of red spruce pierce the forest skyline from southeastern Canada through New England, eastern New York and the Appalachian Mountains to Georgia. Frequently in mixture with white pine, hemlock, balsam fir, sugar maple, yellow birch, or beech, pure stands are usually limited to swamps and mountain tops. In its northern range, red spruce grows on well drained soils near sea level, but ascends in the Adirondacks to altitudes of 4,500 feet and in the Southern Appalachians is seldom found below 5,000 feet.

Devereux Butcher

The open, wide-spreading crown of red spruce reaches heights of sixty to one hundred feet

Red spruce of the north reaches heights of sixty to eighty feet, with trunk diameters of nearly two feet. Larger sizes are attained in the Southern Appalachians with occasional trees over one hundred feet high and up to four feet in diameter. Some botanists classify these southern mountain spruce as *Picea australis*. The crown of red spruce is less regularly symmetrical than that of most other spruces, and with maturity becomes open and wide-spreading. Numerous large, irregular branches droop as they extend outward, before turning up at the tips.

The plump four-sided, dark, shiny, yellow-green needles are about half an inch long and grow singly from all sides of the twigs and branches. They are slightly incurved, usually blunt-pointed, and have a prominent midrib on the lower surface. They remain on the twigs about six years. A reddish coat of down persists on the slender new twigs through the first year. This, together with the short incurved needles helps distinguish red spruce from all but black spruce whose needles are more nearly blue-green, and without the midrib on the lower surface.

Bright red, oval, pollen-bearing staminate flowers about half an inch long grow close to the twig near the ends of the previous year's growth in April and May. The pistillate flowers appear simultaneously but on the ends of different branches of the same

tree. They are reddish green, oblong, cylindrical cones about three-quarters of an inch long. Standing erect at first, they hang down after being fertilized, and in the autumn of the same year mature as elongated egg-shaped cones one to two and a half inches long. Purplish or light green during the spring and early summer, they become a light, glossy, reddish brown when ripe. The rounded, entire margins of the scales help distinguish these cones from those of black spruce. Also, the cone scales are thicker and less flexible than those of white spruce. The dark mottled brown seeds are shed through fall and early winter, and the cones drop by the end of the following year. The seed are about an eighth of an inch long, and with the full rounded wing are nearly half an inch long.

The red cones apparently attracted the German botanist, Johann Heinrich Friedrich Link who is responsible for the name *Picea rubra,* as early as 1841.

Devereux Butcher

Glossy red-brown cones emerge from last year's dark yellow-green needles

Old trunks have dark, reddish brown bark often appearing as if washed with gray. It is hard, firm, and about half an inch thick.

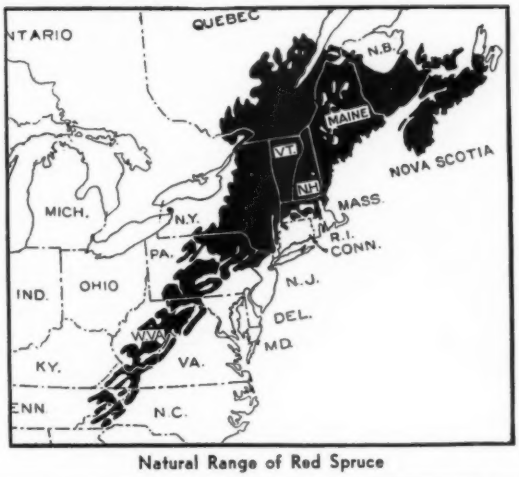
The dark reddish-brown bark of mature trunks is hard and firm, often appearing as if washed with gray

The light, soft, narrow-ringed wood is faintly tinged with red, but a layer of sapwood often two inches thick is almost white. Averaging about twenty-eight pounds to the cubic foot when air dry, the wood is easy to work, free from pitch or distinctive flavor, and holds paint fairly well. The combination of strength and stiffness in relation to weight gives spruce a special place in the construction of ladder rails, canoe paddles, and light oars, but the long straight fibres and light color favor it for the manufacture of paper. Spruce furnishes nearly one-third of the pulpwood for American paper manufacture. Domestic spruce production in 1937 was 2,010,720 cords, of which 1,400,000 cords may have been red spruce. That year some 120,000,000 board feet were cut for lumber.

The saw timber stand of red, white, and black spruce within the northeastern United States has been estimated at sixteen billion board feet. Probably two-thirds of this is red spruce. The Canadian supply of the several spruces is not only greater but of better quality. Growth on the whole is slow. On better sites an acre of trees up to ten inches in diameter will produce about a cord each year, but the average is more nearly half of this.

Fire is the worst enemy of spruce. Fortunately, however, its preference for damp situations usually retards a real conflagration. Occasionally, the heavy accumulation of debris becomes dry and fires sweep into the dense crowns with disastrous results. Less spectacular ground fires are especially damaging to the young growth.

Of the many insects which prey upon the foliage, bark, wood, and twigs of spruce, the European spruce sawfly is the worst. Its ravages now extend through much of Canada, New England and eastern New York.



Natural Range of Red Spruce

BAGGING GAME LAW VIOLATORS

(*Continued from page* 601)

Tasmanian devils shipped by way of Holland.

Enforcement of the federal game laws may seem like dull, cut and dried work. A man violates a law; he is apprehended; he is tried in court, the case is over. Were it as simple as that, the work of a game agent would be easy. It is no exaggeration to say that every assignment an agent receives is a dangerous one—dangerous because the agent never knows what will happen when he makes an arrest. Sometimes an agent's life depends on quick thinking and fast action. In Arizona, not long ago, a federal agent and a state warden were driving along a lonely road when they saw a car with a crate tied to the radiator. The agents partially blocked the road and stopped the approaching car.

Five hunters were on their way home with what apparently was a legal kill of doves. The agents, however, had a hunch and insisted upon searching the hunters' automobile. While four men occupied the attentions of the game agents, the fifth hunter stole the ignition key of the agent's car. Soon a third automobile came up the road. One of the parked cars had to be moved to permit the third to pass. Two of the hunters stepped into their car and drove off.

With a set of duplicate keys, the agents started their car and gave chase. The violators' high-powered machine was almost out of sight, but skill gained as a dirt-track racer in earlier days made it possible for the agents to close the gap between the two cars. The pursued and the pursuers dashed up one road and down another at breath-taking speed. There was a sudden screeching of brakes as the two cars came to a halt; the fugitives jumped out and ran for cover; but a shout of "Halt or I'll shoot" stopped them both. The chase had ended.

As the two men were being handcuffed, one of the agents saw a furtive motion. He lunged at the prisoner and grabbed his arm. A knife fell to the ground. Later the agent learned that the car-driving, knife-holding violator was the one-time king of a ring of bootleggers. In prohibition days he was tried for killing two alleged competitors. He pleaded self-defense and was acquitted.

Take the case of the agent who obtained evidence against a gang of bootleggers in the South. The ringleader was a gentle-looking chap who had served time in federal penitentiaries, had "wiped out" two men, and was said to hate strangers on general principles. This man was no fool. To obtain evidence against him required shrewdness, alertness, and courage. The agent not only obtained evidence against this merciless racketeer but received the damaging information from the tough gentleman himself! The facts are stated succinctly and almost casually in the agent's report. This is how it happened.

After trying unsuccessfully to apprehend the gang, it was decided to take drastic action. We assigned one of our crack undercover operators to move in with the bootleggers. This agent, among other things, had been an expert river pilot and a successful salesman. He went straight into the nest of law breakers, posing as a river pilot. He was so good the bootleggers hired him to operate their speed launches. He and the gang leader became very chummy. The agent's acting must have been good, for the bootlegger didn't know his pilot was a federal law-enforcement officer until the night the arrests were made. Little imagination is required to picture what would have happened to the agent if his identity had been discovered before the gang was placed behind bars.

In the San Francisco area, a popular road-side restaurant was known to be a favorite rendezvous of people who enjoy buying wild duck or goose dinners. "Inside information" disclosed the fact that the birds were kept in a large ice-box in the kitchen. Search warrants were useless. By the time agents were in the building, the ducks had disappeared. Orders went out to the agents from my office: "Get that evidence anyway you can, so long as your actions are legal."

At that time a WPA road gang was constructing a highway that passed in front of the tavern. Suddenly an idea clicked in the agent's mind.

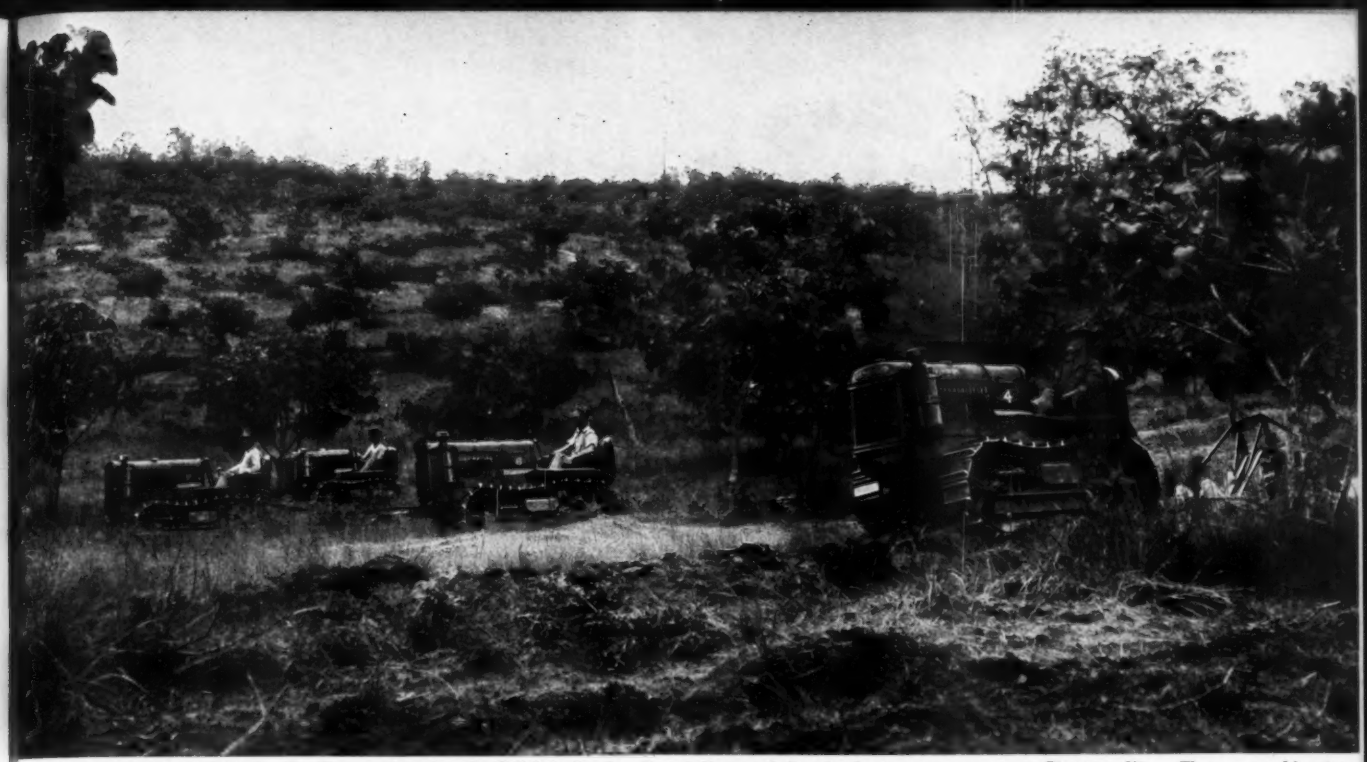
"What good is my college training if I don't use it?" he asked his assistant.

"No good. Let's use it."

The next day two new surveyors were working on the WPA project. The regular personnel thought it odd when the two new men started getting their lines over into the restaurant property, (*Continuing on page* 622)

TREES AND THEIR USES—No. 46—RED SPRUCE

RED SPRUCE IS A VALUABLE EASTERN EVERGREEN WHOSE RANGE IS FROM SOUTH EASTERN CANADA THROUGH EASTERN NEW YORK AND SOUTHWARD ALONG THE MOUNTAINS TO NORTH CAROLINA, TENNESSEE AND GEORGIA.
IN MOUNTAIN FASTNESSES RED SPRUCE IS A MOST PICTURESQUE TREE. IN MUCH OF THE HIGH MOUNTAIN PORTIONS OF ITS RANGE IT GROWS IN MIXTURE WITH BALSAM FIR TO DOMINATE THE WILDERNESS. TO THE FAR NORTH IT GROWS IN SWAMPS AT SEA LEVEL, BUT IN NEW ENGLAND AND NEW YORK, IT CLAIMS MOUNTAINS OF 4,000 TO 4,500 FEET WHILE IN THE SOUTHERN MOUNTAINS IT IS SELDOM FOUND BELOW 5,000 FEET ABOVE SEA LEVEL.
IN THE EARLY SPRING OF EACH YEAR CHILDREN GATHER SPRUCE GUM FROM THE SEAMS OF THE TRUNK. STIFFER THAN STORE GUM IT HAS ITS OWN PECULIAR WOODSY FLAVOR.
THE WOOD OF RED SPRUCE IS VALUABLE FOR PULP AND LUMBER, BUT IS ESPECIALLY SOUGHT FOR THE SOUNDING BOARDS OF PIANOS, AS WELL AS FOR VIOLINS AND OTHER STRINGED MUSICAL INSTRUMENTS. CANOE PADDLES OF SPRUCE ARE PRIZED FOR THEIR STRENGTH AND LIGHT WEIGHT.
-FADER-



Four International T-20 TracTracTors working for the Tallahala Lumber Co. of Hammond, La., in the tung-tree grove near Picayune, Miss. They are working together between parallel rows of 7-year trees, disking down a cover crop of crotalaria. Fertilization is mostly by cover crops—crotalaria being planted in the spring and disked down in July, and vetch planted in the fall.

Large-Scale, Low-Cost Tung Production with International TracTracTors

THOUSANDS of acres of cut-over land in the vicinity of Picayune, in southwestern Mississippi, and in nearby parishes in Louisiana, are being planted in tung trees. By the use of tractors in clearing the land, and in cultivating and disking down cover crops after the trees have been planted, growers in this section are working out new and profitable methods of producing the crop.

One of the International T-20's shown pulling an International Harvester reinforced 5¼-ft. offset orchard disk harrow with 22-inch disks.

A 5,000-acre tung-tree grove, with about 375,000 trees, located near Picayune and owned by the Tallahala Lumber Company is typical of the more important tung-tree projects in Pearl River county on which large-scale, low-cost cultural methods have been successfully developed. And here is where International TracTracTors come into the picture. Four International T-20 TracTracTors are used in cultivating and in disking down the cover crops on this project. And their ability to cut the cost of clearing land has been proved time and again throughout all cut-over areas.

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FIREPROOFING THE CHRISTMAS TREE

THE AGE-OLD fear of holiday holocausts in the home may be reduced if not actually eliminated by the application of chemicals which render the needles, wood, and other inflammable parts of Christmas trees and decorations resistant to fire. Dr. Martin Leatherman, associate chemist in the United States Department of Agriculture, has found that fairly concentrated solutions of ammonium sulphate or of calcium chloride when absorbed by a tree are almost equally satisfactory.

Ammonium sulphate is preferred because it is cheap, effective, and easily obtained. Calcium chloride, while thoroughly effective and cheap, is more difficult to buy in small quantities. Calcium chloride, however, has the advantage of holding moisture in the foliage, thus retaining the natural color and helping prevent the needles from dropping.

As explained by Dr. Leatherman, the method by which Christmas trees may be made fire resistant, if not actually fireproof, is based on the fact that "a living tree draws up water and dissolved mineral matter from the soil through its roots. If the stem or trunk of the tree is cut off above the ground and the cut end placed in water while the needles or leaves are still able to evaporate water brought to them from the stem, the cut end takes up relatively large quantities of water. This water-absorbing power permits the introduction of dissolved substances into the tree after it has been cut. These circulate through the tree and are carried into the foliage. Certain species of evergreen trees used for Christmas trees, the Norway spruce for example, drop their needles easily. Once the needles have become loosened, they are no longer able to evaporate water brought to them through the stem, and the tree as a whole loses its power to take up a flameproofing solution. The needles of other species, for example certain pines, are not loosened so readily, and these trees appear to retain their power to evaporate moisture for longer periods after cutting. With any given species the length of time after cutting during which the tree will retain its ability to absorb water or solution will vary with the condition to which it has been subjected, such as exposure to wind, high temperature, and sunlight."

In actually applying the chemical, Dr. Leatherman suggests first that trees for treatment be as freshly cut as possible. He has found, however, that even those which have been enroute to the market for several weeks may absorb sufficient solution to make them fire resistant. Preliminary to the treatment one should have a large earthen crock, glass jar, or galvanized pail available. After cutting the base of the tree on a long diagonal slant or in the form of a narrow V, the entire tree should be weighed. The weight of the ammonium sulphate needed will be one-fourth of the weight of the tree.

Safety at Christmas! — the treated tree is immune even to the applied flame of a candle

Place the desired amount of ammonium sulphate in the receptacle and dissolve with one and a half pints of water for each pound of chemical. When this is done, stand the tree in the solution and set it in a cool place away from direct sunlight where it may remain several days or until most of the solution is absorbed. Dr. Leatherman attained best results when the surrounding temperature ranged between 55° to 65° F. Not only was the solution absorbed more readily at this temperature, but the foliage retained its green color longer than when treated in a warm room of the average house temperature.

Where calcium chloride is available it may be substituted and applied in the same proportion as described for ammonium sulphate.

Ammonium sulphate can usually be purchased from stores dealing in seeds, fertilizers, and farm supplies. It need not be chemically pure and any turbid or muddy appearance in the solution does not materially reduce its efficiency for fire resistant purposes. Calcium chloride may be purchased from dealers in building supplies, but seldom in smaller quantities than one hundred pound sacks. Its power to actively absorb moisture from the air makes it necessary to pack this chemical in moisture-proof packages.

The degree of fire resistance, according to Dr. Leatherman, depends upon the amount of the chemical solution absorbed by the tree. If the greater part of the solution is taken up, the tree will have a high degree of fire resistance. Naturally this is most quickly accomplished when a freshly cut tree is used. Trees which have been shipped long distances and become dry since their removal from the forest may absorb the solution with difficulty and consequently cannot be made completely fire resistant. Even a partially treated tree, however, will seldom blaze when exposed to a small flame or to an electric spark. Larger flames such as would come from burning cotton or other decorative material can ignite any but the most thoroughly impregnated tree.

To avoid further danger, the decorations and cotton so frequently used to simulate snow may also be fireproofed. Ordinary raw cotton can be made fire resistant by sprinkling it with a solution of seven ounces of borax, three ounces of boric acid, and one and one-half ounces of soap powder in two quarts of hot water. Spread the cotton on a concrete floor or other surface which will not be injured by wetting, and spray or sprinkle the solution over the cotton while it is still warm. The treated cotton should then be left to dry thoroughly before it is handled, or the natural fluffiness of the cotton will be lost. If the cotton is dipped in the solution it will be matted and unattractive. Should absorbent cotton be used rather than raw cotton, the Department of Agriculture recommends omitting the soap powder from the solution.

ROBERT MARSHALL

Principal administrative officer since 1937 of the Division of Recreation and Lands, United States Forest Service, who died suddenly on November 11 while enroute to New York. Author and explorer, Mr. Marshall was formerly director of forestry for the Indian Service of the Department of the Interior. His best known books are "The People's Forests" and "Arctic Village."

Storm Lumber Sold

F. A. Silcox, chief of the Forest Service, and administrator of the Northeastern Timber Salvage Administration, has announced the approval of a contract with the Northeastern Timber Marketing Association, a cooperative organization of wholesale lumbermen, to dispose of lumber now manufactured, or to be manufactured, from logs purchased by the Surplus Commodities Corporation in New England, as a result of the hurricane of a year ago. The cooperative organization, under its contract, will meet the wishes of the lumber industry that the lumber market be not unduly disrupted because of the disposal of approximately 600,000,000 feet of lumber. The cooperative will provide for wide distribution through the usual marketing channels over a period of four and a half years, at the same time giving assurance of the recapture of the investment the Disaster Loan Corporation has made in salvaging the timber.

Mr. Silcox emphasized that under this arrangement ample provision is made to sustain the needs for essential local forest industries and local labor dependent on them. It is expected that when the organization is completed offices will be established in either New York or Boston. Control of the marketing association will be vested in a board of directors, elected by the membership from subscribing members. The government's interests will be protected by an adequate performance bond.

An Invitation to All Who Long for the Forest Trail

Wherever there are woods and mountains and lakes, wherever the hoot of the owl or the sound of wild animals or birds is found, wherever the winds are fresh with the fragrance of pine, wherever the spirit of such things is alive in city home or remote cabin—*there* the name of Ernest Thompson Seton is a name to conjure with!

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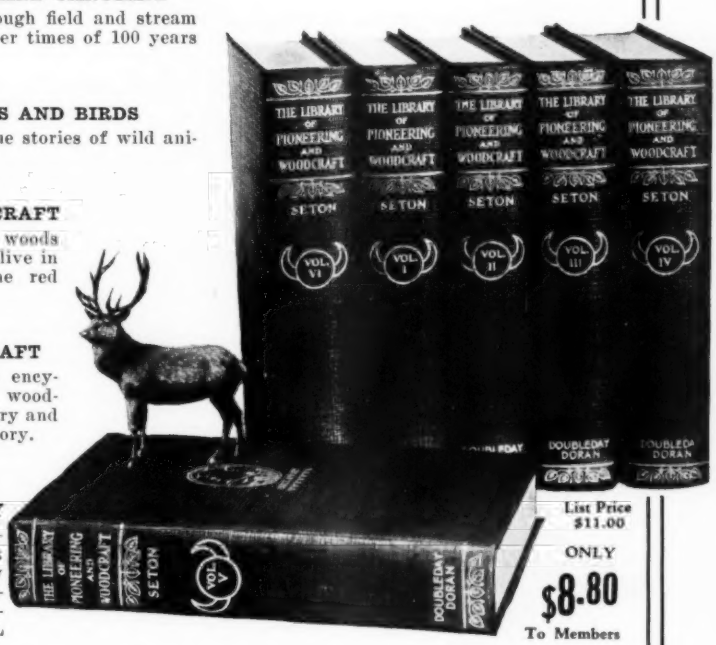

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The National Christmas Tree

(*Continued from page* 586)

minutes. Carol singing during the short time the President is at the tree is of necessity brief—but it is very beautiful. The carols are entrusted to invited groups of experienced singers such as church choirs, university glee clubs, an oratorio association, and the Washington Schola Cantorum directed by Arturo Papalardo.

Preparations for the National Community Christmas Tree and the ceremony attending its lighting by the President get under way early in November and from that moment Christmas has begun for the executive committee. During the week preceding Christmas Eve the stands are erected and everything made ready for decorating the tree, which is done on December 23 by the Electric Institute and members of the Community Center Department of the District of Columbia Public Schools. On this day also those in charge of such groups of participants in the celebration as police, high school cadets, boy and girl scouts and ushers meet at the tree for a "rehearsal."

Then comes Christmas Eve. Committee members anxiously scan the sky. If it is cloudy, their observations continue and anxiety increases as the hours pass. They have in mind the Chief Executive and his family, who must sit in an open stand with only a canvas between them and the sky. They have in mind, too, the hundreds of people participating in the ceremony who have only the sky above them. But fate has been kind. Only once has it rained during the ceremony, only once has there been snow. The usual weather has been clear and cold.

By mid-afternoon most of the committee members have arrived in Lafayette Park, as indeed have also a goodly number of spectators. Police guard the entrances, and smiling civilian ushers show guests to their seats. The President's stand is small, accommodating only the Presidential party and about a hundred officials. Four hundred additional seats are assigned to committee members and others. The remaining spectators stand.

Boy Scouts are busy distributing the beautiful official programs which are the gift of The American Forestry Association. The chairman of the committee arrives bearing a huge box which is turned over to the Girl Scouts. From it emerges the Christmas roses which are to be presented to the First Lady. Now the Marine Band, in gay red coats, sounds the first notes of the preliminary concert of Christmas music, and the presiding officer, frequently a Cabinet officer or a Senator, arrives. The crowd grows tense with expectancy.

Officers of the Washington High School Cadet Corps, who with Boy and Girl Scouts form a guard of honor, are lined up along either side of the driveway to the back of the stand. Suddenly word flashes down the line from the police officer on the curb to the officials on the stand that "They're coming!" The newspaper photographers make ready; every radio announcer draws a preparatory breath. The guests in the stands rise as the Presidential car draws up, closely followed by other cars. A moment later the White House family is being escorted down the short center aisle to seats in front of the stand.

What a picture of family life they make at Christmas time! To look back over the past few years, Mrs. Roosevelt, leading two or more of her grandchildren, is usually first to occupy the Presidential box, closely followed by the President's mother, daughters-in-law, and children and women guests. Then comes the President surrounded by his sons and White House aides. All who may be spending Christmas at the White House, whether relatives or guests, are brought to the lighting of the National Community Christmas Tree.

The entire company assembled in the park, whether 1,000 or 10,000, stands as the President enters, and frequently all remain standing during most of the program.

A member of the local clergy opens the ceremony with a brief invocation. The presiding officer delivers an equally brief introduction. Then a Boy Scout moves forward into the tiny space before the microphone and greets the President. A Girl Scout presents her offering of roses to the First Lady. All of this has taken scarcely five minutes. Thus early in the ceremony the great moment has arrived. The President, usually with a jovial word, presses the button and the tree, dark until now, glows from crown to foot with myriad jeweled lights. Audibly the crowd catches its breath, then is silent as the President begins his Christmas greeting to the nation.

When the President ceases speaking the carolers' voices are heard — "Silent Night" and "Hark the Herald Angels Sing." It is the custom that the finale shall be "Cantique de Noel," a cornet solo played by a member of the Marine Band, and if there is earthly music nearer Heaven than the cornet's notes in this French carol on the frosty air of Christmas Eve, it is far to seek. A benediction reverently received, and the lighting of the National Community Christmas Tree is over. There is much handshaking and many wishes for "A Merry Christmas" to the President as he and his family depart. The "singing tree" takes up the theme of the carolers. The crowd mills around it, listening to the music, admiring its beauty, repeating the old greeting which is ever new, "Merry Christmas."

Since 1937 Mrs. Roosevelt leaves the ceremony just before its conclusion so that she may be present at some celebration in the inhabited alleys of Washington, where more than 200 Christmas trees are lighted. This movement was started by the Woman's Council of the Washington Federation of Churches in 1936.

Yes, Christmas this year touches with fresh meaning the hearts of the people of a troubled world. May the National Community Christmas Tree point the way prophetically toward an International Tree around which mankind will in the not distant future celebrate the birthday of the Prince of Peace.

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65TH ANNUAL MEETING

of

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FEBRUARY 1, 2 AND 3

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The Mississippi Gulf Coast is a land of enchantment for all whose interests touch upon an abundant outdoor life. Particularly around Biloxi, the ancient port over which seven flags have flown at different times, does the forest merge with the sea to form an Eden for the forest and wildlife conservationist—and especially for the recreationist.

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In this abundant land the Association has planned a diversified and unusually interesting program, including field trips—all arranged so that those attending the meeting will have ample time, should they care to, to take part in the Mardi Gras at New Orleans the week following. So plan now to join with others on the magical Gulf Coast in February. Hotel reservations—rates $5 a day single and $4.50 a day double, American plan—may be made early by writing The American Forestry Association, 919 Seventeenth Street, Northwest, Washington, D. C.

AFA Board Acts on Forest Restoration Bill and Public Control Policy

THE Board of Directors of The American Forestry Association at its fall meeting held on October 20 placed itself on record as opposed to the legislation proposed by the Forest Restoration Bill now pending in Congress. This measure commonly known as the forest leasing bill was introduced late in the last regular session of Congress and is expected to come up for consideration during the next regular session which begins in January. After extended consideration of the proposal, it was the unanimous opinion of the Board that the bill is of doubtful value in meeting the objectives claimed for it, that it would be difficult of application and that its management-by-lease feature is unsound in principle. The Board's disapproval was voted in the following resolution:

"The American Forestry Association endorses technical and financial cooperation by the Federal Government in advancing the practice of forestry on private lands, as exemplified in the Clarke-McNary Act of 1924, but does not favor the particular form of assistance proposed in the Cooperative Forest Restoration Bill (H. R. 7271, S. 2927). In its judgment the actual management of private lands and the harvesting and marketing of the products therefrom by the government under cooperative agreements or leases is unsound in principle, is of doubtful value in meeting existing unemployment emergencies, presents serious administrative difficulties, and is likely to prove more expensive and less effective than other methods of attaining the same objective."

At the same meeting the Board's position in respect to the application of public control or regulation to forest operations on private lands was defined. Recognizing that mismanagement of private forest lands jeopardizes the public interest and therefore is properly a matter for public concern and action, the Board took the position that the regulatory power in such instances should be exercised by the states and just as rapidly as public opinion assures effective enforcement of laws requiring that private forest lands not to be converted to some other use shall be kept in a productive condition. The Association's policy as adopted by the Board is given in full in the following resolution:

"The American Forestry Association believes that private forestry will progress most rapidly on lands where the owners are sufficiently convinced of its value to adopt sound methods of management of their own accord. There will always be some owners, however, who do not fall into this class and whose mismanagement of their lands jeopardizes the public interest.

"In order to meet this situation the Association favors the use of the police power to the extent necessary to safeguard the interest of the general public. Most states now make use of that power to require private owners of forest land to take certain steps to reduce the fire danger, and a few prescribe how the timber shall be cut.

"The Association believes that as the next step forward the regulatory power should be used by the states as rapidly as public opinion is sufficiently favorable to promise its effective enforcement to require that all forest lands not to be converted to some other use be so handled as to maintain them in a productive condition. Such a requirement would permit of complete flexibility in adopting methods of management best suited to individual properties, would not affect the practice of progressive owners, would constitute a reasonable restraint on others, and is the minimum necessary to safeguard the interest of the public in the perpetuation of an essential natural resource."

WESTERN FORESTRY MEETING

December 14, 15 and 16 have been announced as the dates of the annual meeting of the Western Forestry and Conservation Association at Portland, Oregon. Public and private forest agencies will meet with lumbermen and timberland owners in discussions dealing with forest protection and lumber practices, with particular emphasis on the overhauling of the present fire control system for increased efficiency.

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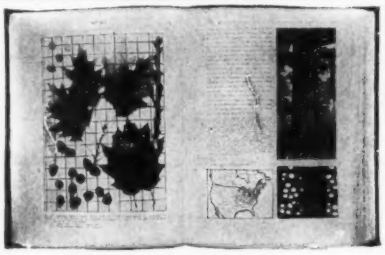

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More About Wood Stoves

M. H. BRUNER'S article in the last number of AMERICAN FORESTS calling attention to the importance to forestry of improved wood-burning stoves now coming on the market or in course of development has brought numerous requests for more information about developments and possibilities in this field. Mr. Bruner described briefly a new type of wood-burner that has been selling like "hot cakes" in the South. Interest is not confined to the South, however, nor are developments in the science of utilizing wood as a home-heating material. Since the hurricane of a year ago, New England has been exploring this field of possibility probably more systematically than any other region. The Connecticut Forest and Park Association has led in studying possibilities and the present availability of improved wood-burning units.

"We have plenty of fuel available in New England," writes Edgar L. Heermance, secretary of that Association. "Millions of cords which ought to be taken out of our woodlands are now going to waste. Practically every farmer can supply his own wood. The only reason people in forest regions have been changing to coal or oil is convenience. Manufacturers are beginning to sense a demand for heaters that will keep a steady heat and require refueling only once or twice a day.

"This is evidenced by the fact that at least three automatic wood-burning stoves are now on the market. These improved stoves operate on the principle of destructive distillation. Sticks of wood carried down by gravity from a fuel magazine are reduced to charcoal and this and the accompanying gasses are then burned. If the stove is correctly designed and operated, combustion is practically complete and there is no deposit of soot or creosote on the flues.

"Some of the new stoves are made of sheet steel. In northern regions, with their lower temperatures, there is a strong preference for cast-iron. The Marketing Committee of the Connecticut Forest and Park Association, which has been working on the fuelwood problem for the past four years, experimented with a small cast-iron stove imported from Germany. Most of the stoves manufactured today in European countries are of the new slow-combustion type. Starting with this German model, the Mason Laboratory at Yale University designed a heater specially adapted to American needs, which is being produced by a heating concern of long standing. The laboratory is investigating other lines of equipment, such as a pipeless furnace, and a combination of heating and cooking stove. Probably it is only a question of time when all wood-burning stoves and furnaces made in this country will operate on the slow-combustion principle, as is the case in Europe. In this way it will be possible to combine the economy of wood-burning with efficiency and convenience, the two features which the older stoves and furnaces lacked.

At a recent meeting of the Connecticut Forest and Park Association, W. Norbert Hill described a wood-burning furnace recently developed in Sweden as a result of intensive research. Three models in nineteen different sizes, he says, are now offered, all of which operate on the principle of destructive distillation of the wood. Describing the furnace, Mr. Hill said, "The large fuel chamber accommodates a sufficient supply of wood to last from eight to sixteen hours, depending on the severity of the weather. In normal operation the vent at the top of the fuel chamber remains closed, the cover being raised only when opening the furnace for refueling, to relieve the pressure in the chamber and thus prevent gases from puffing out the charging door.

"The air intake runs the full length of the furnace beneath the grates and has an opening at each end. Air from this channel passes upward through the central part of the grates and carries the gases from a glowing bed of self-forming charcoal down through the sides of the grates into the lower chambers where complete combustion takes place. The exhaust gases then rise through vertical flues into the smoke chamber and thence to the stack. This slow burning of the wood saves a large amount of the potential heat that formerly went up the chimney, and results in an efficiency rating of about seventy-nine per cent.

Mr. Hill related his own personal experience with one of these burners which he has operated for two winters with satisfaction. It was connected with a hot water system supplemented with a circulator pump and thermostatic control and furnished heat to twenty-one radiators aggregating 998 square feet of radiation. Fuel consumption has averaged twenty-eight cords a season and the labor involved has been about the same as for a hand-fired coal furnace. The twenty-eight cords of wood used cost $2.50 a cord for cutting and hauling. If $1.00 a cord is added for stumpage the fuel cost represented is $98.00 a winter as compared with an estimated cost of from $270 to $370 for coal or oil. In Connecticut towns where delivered wood costs from six to ten dollars a cord, Mr. Hill said, use of wood still compares favorably as to cost with coal or oil.

In Mr. Bruner's article last month, the improved stove shown is a development of the Automatic Draft and Stove Company of Lynchburg, Virginia, and sold by the Ashley Automatic Stove Company, Columbia, South Carolina, and the Richmond Stove Works, Richmond, Virginia. Mr. Heermance draws attention to the fact that an improved woodburner has also been developed by the Shenandoah Equipment Corporation of Harrisonburg, Virginia, and that as a result of the Association enlisting the services of Professor Lauren E. Seeley of Yale in redesigning the Juno Stove of Germany, the H. B. Smith Company, Inc., of Westfield, Massachusetts, is making an improved wood-using unit known as the Char-Wood Heater.

Hearings by Joint Committee on Forestry

The first of a series of five public hearings by the Joint Congressional Committee on Forestry were held at Syracuse, New York, on November 9 and 10, and at Mobile, Alabama, on November 14 and 15. Dates for the hearings at San Francisco, California, have been announced as December 6 and 7, for Portland, Oregon, December 12 and 13, and for Madison, Wisconsin, December 18 and 19. Tentative plans are also being made for a hearing at Boston, Massachusetts, after Congress convenes in January and for a final hearing in Washington preparatory to the report which must be submitted to Congress by April 1, 1940.

The Committee's chairman, Senator John Bankhead of Alabama, attended the hearings at Mobile and is planning to participate in those held on the West Coast. The Syracuse meeting was in charge of Representative Hampton P. Fulmer of South Carolina, vice-chairman of the Committee, who will also conduct hearings at Madison. Other members of the Committee are: Senators William J. Bulow of South Dakota, Ellison D. Smith of South Carolina, D. Worth Clark of Idaho, Charles L. McNary of Oregon; and Representatives Wall Doxey of Mississippi, Walter M. Pierce of Oregon, Daniel A. Reed of New York, and Harry L. Englebright of California.

Arrangements for the appearance of representatives of various organizations and of individuals at the remaining hearings may be made through Albert Boutwell, secretary of the Committee, at Room 231, Senate Office Building.

Southern Forestry Congress Dissolves

After seeing its major objectives accomplished or substantially advanced, the Southern Forestry Congress, organized in 1916 and inactive since its last meeting in New Orleans in 1930, has been dissolved. The action was the result of a joint recommendation of William L. Hall—consulting forester in Hot Springs, Arkansas, J. S. Holmes—State Forester of North Carolina, and Joseph Hyde Pratt—the first president of the Congress and now Senior Engineer-Consultant with the Geological Survey. A cash balance of $107.93, held by the last elected president, the late A. L. Strauss of the Malvern Lumber Company in Arkansas, has been contributed to The American Forestry Association for use in its educational work for forest fire prevention.

The initial meeting at Asheville, North Carolina, on July 11 to 15, 1916, elected Joseph Hyde Pratt president and J. S. Holmes secretary. On that occasion, as reported in *American Forestry* for August, 1916, "the Congress urged the States of Florida, Georgia, South Carolina, Mississippi, Arkansas, and Alabama to undertake some form of forestry organization modelled after the principles successfully worked out in other southern states, of employing technical foresters under boards free from political pressure"; devoted much attention "to state organization for fire protection and the fire problem in the southern pineries"; and established a means to awaken the people of the South to the value of their forests as a great and permanent resource.

During the fifteen years it was active, the Congress kept these questions to the fore in the south and made a notable contribution to progress along these three major lines. Its last meeting was held in 1930. At that time A. L. Strauss was elected president and tentative plans were made to hold the next meeting in Hot Springs, Arkansas. Industrial conditions which then prevailed prevented the meeting from being held, and with the recent death of Mr. Strauss it appeared unlikely that the Congress would be continued.

A few copies of the proceedings of the Sixth Congress, held in Savannah, Georgia, in January, 1924, dealing largely with the naval stores industry, and of the more general Seventh Congress in Little Rock, Arkansas, in January, 1925, are still available, according to State Forester Holmes. Requests may be sent directly to J. S. Holmes at Raleigh, North Carolina, or to The American Forestry Association. They should be accompanied by ten cents to cover postage and handling.

SANTEE TIMBER SALE

The South Carolina Public Service Authority has announced the purchase for $1,071,000 of 104,000,000 board feet of timber, mostly virgin hardwoods, from the Brooklyn Cooperage Company in the Santee basin area to be flooded by the Santee-Cooper hydro-electric and navigation project. At the same time it was announced that removal of this timber would begin at once under a plan that will not disturb market conditions. The Brooklyn company retained 30,000,000 feet for its own operations.

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OUR AMAZING EARTH, by Carroll Lane Fenton. Published by Doubleday, Doran & Co., New York City. 345 pages, illustrated. Price $4.50.

A vividly told history of the earth, opening new and fascinating vistas and giving in new perspective the hills, the valleys, the rivers and the oceans which make up our world. Authentic, thorough and scientifically unimpeachable, it is popularly written by one of America's foremost geologists.

BIRDS, by Gayle Pickwell. Published by McGraw-Hill Book Company, Inc., New York City, 219 pages. Price $3.00.

Not intended as a manual for identification, this book ripens the acquaintance of known birds, giving the reader a richer knowledge of their homes and home life, their plumage, their foods and feeding habits and their travels. The story of *Birds* has been developed from data from widely separated sections of the United States. For the first time in a book of this kind, birds of the far West associate with those East of the Rockies, and individuals are treated individually. It is profusely illustrated with beautiful photographs by the author, many of which have never been published before, and these are augmented by drawings. The striking frontispiece, in full color, of the Stellars Jay, was done by Mrs. Pickwell, the author's wife.

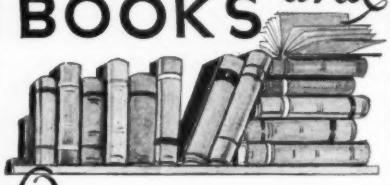
ECONOMICS OF PRIVATE FORESTRY, by Ralph W. Marquis. Published by the McGraw-Hill Book Company, Inc., New York City. 219 pages. Price $3.00.

Admitting, without apology, that destructive forest cutting as long practiced by private operators was encouraged by vast supplies of virgin timber, Dr. Marquis traces the progress of public thought through the period of apparent inexhaustibility, past more recent times when forestry was driven by the fear of a timber famine, to the present when forest products are looked upon as crops and forestry as a means of producing them. To meet this new conception, the *Economics of Private Forestry* enumerates and defends some of the responsibilities which should be assumed by the public and those which the author believes fall on the shoulders of private ownership.

Without the color of propaganda or undue altruism, the solution is presented in terms of fire protection, tax reform, low-cost credit, and markets to the end that all forest land may be put to its highest use. With full consideration of the advantages of federal and state ownership of large areas of forest land and the need of government aid during a period of reconstruction, the author believes "the greatest share of the responsibility of providing for the future falls on private ownership."

In these times of confused thought, Dr. Marquis submits a clearly considered statement on forest economics which deserves the study of foresters, lumbermen, and land economists.

NEW BOOKS and OTHER PUBLICATIONS



A list of Selected Books on Forestry and related fields of Conservation is available to members of The American Forestry Association on request.

FREMDLANDISCHE WALD-UND PARKBAUME, by C. A. Schenck. Published by Paul Parey, Berlin S.W. II. Three volumes of 615, 645, and 640 pages, with maps. Price 62 German Reichsmark ($24.00).

A mine of information on dendrology and climate as affecting the forests and the individual trees of the northern hemisphere, capable of growing in Germany but native beyond its borders, is assembled in Dr. C. A. Schenck's monumental work on Exotic Forest and Ornamental Trees. Americans with a reading knowledge of German will delight in the broad coverage and authentic detail available on all the more important trees of this continent, many native to Asia, and a considerable number of those of Europe. It is the product of personally collected notes assembled by Dr. Schenck through a lifetime of travel to which he has added the fruit of an extensive correspondence. Forest libraries will find it an invaluable addition to their reference material on dendrology.

HAWKS IN THE HAND, by Frank and John Craighead. Published by the Houghton Mifflin Company, Boston, Massachusetts. Illustrated. 290 pages. Price $3.50.

Falconry, field observations of some of the larger birds, and adventure combine to make this book by the Craighead brothers unusual. Joining with Frank and John Craighead in their search for birds to train and photograph were two equally vigorous boys, and a number of friends.

All who relish red blooded, boyish adventure will enjoy this book, while ornithologists will prize the bird records secured during long hours of vigilance as the boys waited their opportunity to make the desired photograph. One finds here a stirring defense for hawks and owls so often persecuted by unthinking sportsmen.

Creeping, Sprawling, Climbing Plants. Cornell Rural School Leaflet No. 4. Cornell University, Ithaca, N. Y.

The Rock Garden, by Henry T. Skinner. Cornell Extension Bulletin No. 403. Cornell University, Ithaca, N. Y.

Fire Blight and Its Control, by E. M. Hildebrand. Cornell Ext. Bull. 405. Cornell University, Ithaca, N. Y.

Land Use In New York, by V. B. Hart. Cornell Ext. Bull. 406, Cornell Univ., Ithaca, N. Y.

Grass Silage, by E. C. Savage and C. B. Bender. Cornell Ext. Bull. 409. Cornell Univ., Ithaca, N. Y.

How Electricity Is Used on the Farm, by C. N. Turner. Cornell Ext. Bull. 410. Cornell Univ., Ithaca, N. Y.

Forest Resources of the Northern Coastal Plain of South Carolina, by E. B. Faulks. For. Survey Release No. 1, and *Forest Resources of the Piedmont Region of South Carolina,* by W. T. Hicks. For. Survey Release No. 2. Both Progress Reports of the Appalachian For. Expt. Sta., Asheville, N. C.

American Pitch Pine and Its Uses—Trade Promotion Series No. 119, Lumber Division, U. S. Dept. of Commerce. Supt. of Docs., Wash., D. C. Price 10 cents.

American Douglas Fir and Its Uses — Trade Promotion Series No. 87 — as above. Price 20 cents.

American Cypress and Its Uses — Trade Promotion Series No. 141 — as above. Price 5 cents.

California Redwood (Sequoia sempervirens) and Its Uses — Trade Promotion Series No. 171, Forest Products Division, U. S. Dept. of Commerce. Supt. of Docs., Wash., D. C. Price 10 cents.

American Western Pines and Their Uses, by W. LeRoy Neubrech. Trade Promotion Series No. 180 — as above. Price 10 cents.

American Douglas Fir Plywood and Its Uses. Trade Promotion Series No. 167 — as above. Price 10 cents.

American Hardwoods and Their Uses, by W. LeRoy Neubrech. Trade Promotion Series No. 178 — as above. Price 15 cents.

Prevention and Control of Gullies, by Hans G. Jepson. Soil Conservation Service, Farmers' Bulletin No. 1813, U. S. Dept. of Agr. Supt. of Docs., Wash., D. C. Price 10 cents.

Relative Water Requirement of Arizona Range Plants, by W. G. McGinnies and Joseph F. Arnold. Coll. of Agr., Univ. of Arizona, Tucson, Arizona.

Soil Conservation Survey Handbook, by E. A. Norton, Soil Cons. Serv., U. S. Dept. of Agr., Misc. Pub. No. 352. Supt. of Docs., Wash., D. C. Price 20 cents.

Forest Resources of the South Arkansas Delta, by R. K. Winters. Forest Survey Release No. 46, The Southern Forest Survey, So. For. Expt. Sta., New Orleans, La.

Products of American Forests, by J. Alfred Hall and T. J. Mosley. Forest Service, U. S. Dept. of Agr. Supt. of Docs., Wash., D. C. Price 20 cents.

Chefs of the Timber

(*Continued from page* 604)

slightly less sugar. One cup melted butter, and two compressed yeastcakes. Now add the pulp and water from two potatoes, plus milk; use enough to moisten and mix into hard loaf. Let rise to three times its size in moderately warm place. Knead down. Put into baking pans and let rise to three times size. Bake."

Pat Ryan, who stood six feet four and was a notable drinker, was almost as good a bread maker as George Kipp. Pat also turned out a fine johnny bread. His finest job, it was generally agreed, was the baked beans he served. In any discussion of beans it should be understood that there are two distinct schools of bean cookery. In New England and Adirondack camps, beans were, and still are, baked in huge castiron kettles, and Pat Ryan's recipe (let down to family size) will produce a product hard to beat. Here it is: "One pound small white navy beans; wash in warm water; put on stove in cold water and let boil three minutes (orthodox cooks to the contrary, it is not absolutely necessary to soak them overnight). Drain and add three tablespoons brown sugar; one-half teaspoon pepper; one-half of ginger; one-half of strong dry mustard, and three-quarters pound salt pork. Cover with water. Bake five to six hours in slow oven."

That is a fine recipe for what might be called eastern style camp beans. In Michigan, and generally from there to the West Coast, a wholly different baked bean is encountered. A kettle or pot is not used. You soak the beans overnight, parboil five minutes, put them into wide shallow pans about three inches deep. For condiment add only pepper. No sweetening. Now, cut salt pork into strips and lay them crosswise of the beans from end to end of the pans. The salt drips down during cooking, which should last from five to six hours in a slow oven. That's the western type camp beans. (Note: Beans cooked in a beanhole in the ground taste no different from beans cooked in a sissy oven. This will be thought heresy by people who don't know anything about the matter.)

Pat Ryan cooks no more, nor does George Kipp. They were masters. On the whole, though, logging camp cooks are better today than ever they were. They are given more to work with and they have steadily improved their artistry. Cooks are usually recruited from the ranks of the cookees, or flunkies as they are called in the West. Alex Couture, now aged but still able to handle a small crew, told me not long ago that he was discouraged over the lack of budding talent among his cookees. Seems he can't find one who will learn how to punch two holes of the correct size and in the proper position in the cans of condensed milk that grace camp tables from coast to coast.

"But, den," said Alex, who is a great philosopher, "dere is always somtin' to kep feller from bein' sure-nuff beeg man."

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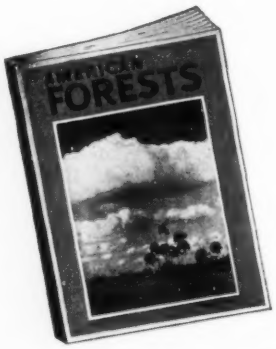

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Christmas Eve in the North Woods

(*Continued from page* 593)

In the deer yard the whitetails bed down for the night under a canopy of fragrant balsam and feathery hemlock. No treetop home, no hollow log, no den to protect them; but, with nose down the wind, their gentle eyes full of peace and contentment, they give themselves up to sleep.

And the stars throb and burn until a late moon lights the eastern horizon with its yellow glow. Mounting quickly toward the zenith, its light, now pure and white, spreads a strange enchantment over the winter wilderness, and lays beauty over all it touches. The sentinel pines proudly lift their heads above all other trees; rugged spruce and graceful white pines lift their arms heavenward forever rejoicing. Listen! In silence they murmur, "Hosanna, Hosanna. The Prince of Peace was born this holy night."

The Cooperative Forest Restoration Bill

(*Continued from page* 598)

ondary to that of cooperative aid.

The foregoing suggestions can be the subject of many objections. Not the least of these are the difficulties in obtaining appropriations for acquisition, the possible need of additional legal authority in some matters, and problems of obtaining joint action by different federal bureaus. In comparison with the Forest Restoration plan one must also weigh the expenditures for work now under way as well as those necessary to meet the objectives of forest rehabilitation.

Even before the matter of cost, however, one must answer the question: Is the proposal that a number of agencies contribute in accordance with the authority with which each is governed sound and does it dovetail with the larger land use and rehabilitation programs of the Department of Agriculture? My answer would be in the affirmative. Specific allocation of funds would be in accordance with formulated policies and programs. Established administrative procedures that are not sufficiently elastic to enable participation in a proposed undertaking would naturally have to be corrected. Only so could the work be carried on with a full degree of economy.

Such a program would necessitate outlining a plan for joint effort on the part of all appropriate agencies toward meeting the needs of each specified restoration unit. This would reveal possible obstacles to joint effort and show the need of additional authority or modification of established procedures and regulations. Any estimate of cost should be based on what the actual cost *should be* under the most efficient and economical administration. My prediction is that the costs over a period of years on any given unit would not equal and certainly not exceed those of the proposed leasing measure plus the amount that would have to be expended by other agencies in completing the program of land rehabilitation. If procedures and rules of various agencies are too rigid to permit adoption to the plan, let them be modified in application to this special undertaking. If legal authority is insufficient, the problem is so important as to command the interest of Congress in modifying the law. If special appropriations are needed, I believe they would be forthcoming. This last is on the assumption that the aggregate cost over a given period will not exceed the aggregate expenditures that will be required under existing methods to meet the problems of the distressed forest regions.

This approach may be criticized on grounds of possible difficulties in acquiring land for national forest purposes in the restoration units. My answer is that if most of the owners are in a position to hold their lands and do not desire to sell them, it is pretty good evidence that they can probably muddle through in some way. Some credit help is now available. If this is not sufficient it might well be provided under a forest credit bill such as has been advocated by the Forest Service but never enacted into law.

The foregoing proposal seems to me in line with the principle laid down by Secretary Wallace when he reorganized the Department of Agriculture more than a year ago. The basic purpose of that reorganization as announced was better to appraise land economy problems in the rural sections of the country and to bring to bear upon them the unified and coordinated resources of all the Department's bureaus and agencies. One feature of this integrated approach was the establishment of regional, state and county committees—the committees provided by the Forest Restoration Bill to some extent duplicate these committees—to study acute rural situations and formulate specific programs for dealing with them—not piecemeal but as the combined interests of agriculture, forestry, wildlife, soil conservation and upstream flood control dictate. I understand that these committees have been established in a number of the states.

It would appear, therefore, that federal machinery is already available for bringing unified action to bear upon those cases where forest depletion is a major factor in the dislocation of the land economy. There is no reason why such action might not be strengthened by bringing in the resources of bureaus and agencies in other branches of the government having to do with land use, such as those of the Interior Department, CCC and WPA. I believe the general public would welcome a demonstration of efficient joint federal action directed to problems of local and national significance.

Smoke Jumping

(*Continued from page* 592)

to the ground. He divests himself of harness and suit and moves to a point of vantage to watch the circling plane.

The white canopy has become the new target of the pilot who, when sure the moment is right, releases the smoke-chaser's equipment pack with burlap chute and streamer. Recovering the pack, the smoke jumper takes off to the fire—or at least to the spot where the fire has been simulated by a man-made smudge. Here is the book record of a typical landing: "Jumper manœuvered chute skillfully and landed 160 feet from target in young lodgepole pine and alpine fir about thirty feet high, near bottom of fairly steep ravine. Jumper carried through crowns without attempting to hold. Chute canopy collapsed over eleven trees and

Fire fighting crew of the future if the present experiments prove successful—the pilot and two smoke jumpers ready to take off

dropper, after gentle stop, held suspended with his feet five feet from ground."

This is the way it goes with one smoke jumper. The second is dropped in the same way. When two jump in one flight the fire fighting outfits would be dropped together after both men are safe on the ground. This is the way it has happened and the way it can happen in most instances, but there are many faults still to be eliminated and many things yet to be done before this scheme can become a workable technique.

It has already been observed that the experiment revealed air density as unimportant to the smoke jumper, and that close stands of timber make ideal landing places. Other observations are:

1. The silk chute canopy itself does not hang and therefore rents, rips and tears seldom occur. The skeleton of the parachute — shroud lines and perimeter hems — catch and hold, thus protecting the surface.

2. Areas with a large percentage of fire or bug killed snags have not as yet been tried — they represent probably the greatest hazard.

3. A system of signalling by the grounded jumper to the plane is essential. It has been proposed that he carry a light radio set in the jumping outfit and this is possible, but the set-up time may be too great. The use of simple visible signals is indicated.

4. The use of this parachute jumping method would entail a thorough training set-up. Two weeks should be sufficient for well selected candidates. Two of the experimenting jumpers were young local men who, until a month ago, had never seen a parachute.

Before an attempt can be made to establish the system on a specific forest or in a region, it will be necessary to make thorough studies of existing conditions and facilities and plan in detail how this aerial technique can be added to and be fully coordinated with the existing fire control organization. This will involve a review of the data and maps indicating location of both lightning and man-caused fires over a period of years, canvass of availability of suitable aircraft within reasonable flying distance, and review and study of transportation and other plans which show the travel time zones of ground movement. In this way maps for dispatcher use can be prepared which will indicate the spots or zones within which the aerial method would have the advantage. Time is the important element, and the competition of air and overland forces will become a part of transportation planning. If the outlay is not too expensive and too elaborate, the scheme appears to have a promising future.

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Pine-Tree Bankers

(*Continued from page* 596)

Pomeroy and Connor base their sustained yield plan on experience plus a simple arithmetical formula. Examining a stand of timber, they decide that it can profitably be logged once every five years. To determine how many of the trees to cut at each logging, they chop down the largest tree, and count its rings. If the tree is 82 years old, it means that timber, in this particular soil, reproduces itself about once every eighty years. Eighty divided by a cutting every five years is sixteen cuttings. A hundred per cent divided by sixteen equals roughly six per cent. Therefore, in this stand they can take out six per cent of the trees at each cutting—and do so indefinitely every five years without diminishing the supply. And if this formula is combined with selective logging and elimination of defective or slow-growing trees, they can remove even more than six percent at each cutting and still leave the stand permanently stocked.

On a tour of his forest, Pomeroy pointed to three trees. "Each of those trees," he explained, "is growing about ten board feet a year. If we cut one, the other two will quicken their growth and we still get thirty board feet of growth a year—perhaps more. Yes, you can eat your cake and have it too!"

When Pomeroy and Connor started, timber experts told them they would be lucky to net an increase of 150 board feet a year an acre. Today they are averaging 440 board feet and have some areas yielding 600 feet an acre. There must be a limit to potential tree growth, they admit, but no one knows what it is.

Lumbermen from different parts of the country have come to see what Pomeroy and Connor have done. One practical lumberman in his zeal to shift to sustained yield scrapped $60,000 worth of equipment — steam locomotives, power skidders, railroad tracks. That happened four years ago when this operator had only a six-year supply of virgin timber left on his 250,000 acres.

Another lumber company with only five or six years cut remaining, called them in to draw up a management plan to shift 121,000 acres of pine to sustained yield. That was four years ago. "If we hadn't done that," says the company vice-president, "we would be winding up operations now. Instead, it looks like we'll be here forever. I've been a lumberman all my life but this is the first time I could figure on staying where I was until I died."

The southern Arkansas pine belt, the home province of Pomeroy and Connor, is a bright spot on the American lumbering map. In many other parts of the nation, from four to five times as much saw timber is consumed as is grown; yet in southern Arkansas the annual growth exceeds the commodity drain by almost twenty per cent.

Today nearly all of the lumber companies in the southern Arkansas pine belt have set themselves up as pine-tree bankers for farmers and small landowners. Like Pomeroy and Connor they agree to keep the farmer's land on sustained yield if he will sell them whatever lumber is cut. Five years ago some of these companies were fighting one another for the privilege of gutting farmers' lands. Today they are competing in selling the idea of tree thrift.

One company has planted demonstration plots along the roadside to show how rapidly the southern pines will grow; another circulates a monthly thrift bulletin to all farmers within trucking radius. A third has a staff of foresters which tours the countryside preaching the investment value of southern pine. Both the United States Extension Service and the Arkansas Forestry Commission have set up special divisions to teach the farmers how to manage their own woodlands. Today approximately 6,000 southern Arkansas farmers owning more than 1,000,000 acres have been converted to pine-tree investment.

But even greater than their achievements to date is the ultimate significance of what Pomeroy and Connor have done. For years we have been reading of pulp mills going South, of newsprint to be made from southern pine, of the chemical wonders to be fabricated from wood. A new wood-using era has been predicted with King Pine replacing tottering King Cotton. But to realize this stirring dream, an adequate, permanent supply had to be assured. Three years ago F. A. Silcox, Chief of the U. S. Forest Service, wrote that the southward trek of the pulp mills had brought the South to "the crossroads." It would choose "cut and get out" lumbering, which meant a brief boom and a terrible bust, or sound timber practices, which would assure the South a stable industry. Today, the operations of Pomeroy and Connor and a host of other pine-tree bankers and investors are turning the South toward a steady income from permanent forests.

Bagging the Game

(*Continued from page* 608)

but the WPA boss told them to mind their own business, so the regulars did.

A knock on the restaurant door.

"Sorry, this restaurant ain't open until tonight."

"That's all right. We don't want to eat. We're surveyors for the WPA, and we're trying to follow a line through here. It goes right through your building."

The performance must have been superb, for the two "surveyors" were invited into the building. With flourishes and mutterings that sound like gibberish to anyone not in the business, the two men finally progressed into the kitchen.

"This line goes right through the ice-box," said one to the other.

"Yes. Sure does. This is going to be a hard one to get. Let me back up here a little closer."

The agent moved backwards, bumped into the ice-box, and "accidentally" opened the door. A few dozen contraband wild birds hung on the racks. The restaurant did not open that night: the owner was in jail.

Experiences like these are not unusual: they are part of the day's work. But the reader should not get the idea that all game-law violators are bootleggers, racketeers, or murderers. As I indicated before, our agents sometimes arrest men who are presumably substantial members of the community, men whose educational and social backgrounds would warrant the assumption that they know they shouldn't break the law.

In Lexington, Kentucky, some time ago, among thirty-seven violators tried in Federal court for hunting mourning doves over baited fields were a policeman, a city attorney, a county attorney, a circuit court judge, a banker, an insurance agent, a hotel operator, a beer dealer, a funeral director, and a florist. They were all fined $70 each. These men certainly knew the law. Some of them thought, however, that they could fool the law and that they could "get away" with it.

Most sportsmen obey the hunting regulations, because they realize the rules are made to safeguard the nation's wildlife from extinction. A sensible sportsman reasons that the regulations are enacted to help perpetuate his sport.

Sportsmen, so-called, who are greedy and want more than their legitimate share of game cannot be tolerated. Last year, five Ohio residents insisted upon hunting wild ducks by means of bait and with live decoys, despite the fact that bait and live decoys are prohibited by federal regulations. The men thought they could fool the agents. The judge thought otherwise and fined one man $1,500 and added a suspended jail sentence of one year and one day. The other four defendants were fined a total of $525.

Fur smugglers are usually violators of the Lacey Act and under the law receive the attention of federal game management agents. Often trappers violate a state law to obtain pelts and then make their violation a federal offense by shipping the furs out of the state. Tracing a shipment of furs is a complicated procedure. It took almost a year to solve the case of a South Dakotan who had shipped eighteen illegally taken beaver pelts. The sale was first noted in New York city. Our agents traced the furs across the country to Hollywood and finally ended the search in Tientsin, China. Arrested and brought to

court, the trapper was fined $200 and given a suspended six-months' jail term. He had made one mistake—one that put Uncle Sam on his trail: he had shipped the furs out of the state.

This trapper, like many others who think they are smarter than the law, did not know that the federal game agents, among other duties, must investigate fur records in all big cities in the United States. Neither did the New Mexico resident, who was caught shipping furs to Chicago. He was fined $500 and jailed for ninety days.

It is difficult to deal in illicit traffic and conceal the information from law-enforcement officers. Sooner or later the illegal activity is discovered. Many cases are solved through the excellent cooperation between federal and state law-enforcement personnel. Each group helps the other in "spotting" offenses and bringing about prosecution or other court action. Cooperation between the two agencies makes it difficult to trifle successfully with the law. Last year federal game agents helped state wardens solve 1,051 violations in forty-three states. The defendants were fined $42,122, and thirty-six men were sentenced to 1,199 jail days.

At present there are forty-five U. S. game management agents and twenty-three deputy game agents operating in every section of the country. Some have fixed districts, while others are constantly shifted about. In the fiscal year ending June, 1939, forty-two U. S. agents and thirteen deputy agents participated in 2,560 game-law cases brought to federal and state courts. Some 2,450 individuals —more than ninety-five per cent—were convicted. I am proud of this record, because it shows that Biological Survey agents neither make useless arrests nor prosecute people needlessly.

That our agents do not arrest individuals unjustly is evident from the fact that the accused are usually convicted quickly by either judges or juries. One of the biggest bootleggers in the Eastern Shore of Maryland was given a trial by jury and was represented by one of the best legal minds in the South. The jury found the defendant guilty within eight minutes after retiring.

Many violators, of course, have not been caught. When sixty-eight agents must cover the entire country, every law-breaker and racketeer cannot be apprehended. Obviously, we are understaffed and need more agents. The fact remains, however, that we do catch many game-law violators. Not infrequently we are aware that certain individuals are committing federal offenses, and if we then fail to make an immediate arrest, it is not because we don't know about the violations but because we haven't had time to collect the necessary evidence. Our men always have more cases than they can handle at once, but they eventually get their men.

War and Wood

(*Continued from page* 589)

has enlarged the personnel and facilities of its forest products laboratories in Princess Risborough near Oxford. All of these laboratories are working on new and improved uses of wood for airplane fuselages, wings and propellers and on the development of other products from pressed wood and from cell wood. Chemical and mechanical processes for improved uses of wood are being intensely explored, studied and developed in all of these countries.

What does all this mean? What significance has the European situation for us? What lessons may we draw from them? It simply means that wood, with us as with Europe, may prove to be the most important basic raw material of the future because from it such a multitudinous variety of products may be made in addition to the usual and commonplace forms of construction and shelter which we have taken for granted for so many years. We scarcely appreciate our vast timber resources nor fully know how to take proper care of them. Unfortunately, we have rather taken all of our rich and abundant resources for granted. Fundamentally, it is our great wealth of natural resources which is the reason for the security, prosperity, and happiness of our people. And these conditions are certainly in violent contrast with the comparative poverty, unhappiness and difficulties of life in Europe today.

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OVER THERE—Factory wheels turn faster, workers produce instruments of death and disability, engines of destruction make their debut behind the trenches! **OVER HERE—Manufacturers of road-building materials and machinery also operate at top speed, make ready new products for preview in Chicago—equipment to build tomorrow's roads.**

OVER THERE—Selfish leaders dictate action to bring about wholesale slaughter and the doom of progress! **OVER HERE—Highway planners, designers, administrators and builders will hear Federal Works Administrator John M. Carmody, Senator Carl Hayden of Arizona, Congressman Wilburn Cartwright of Oklahoma and Public Roads Commissioner Thomas H. MacDonald in up-to-the-minute talks about construction for peace, prosperity and progress.**

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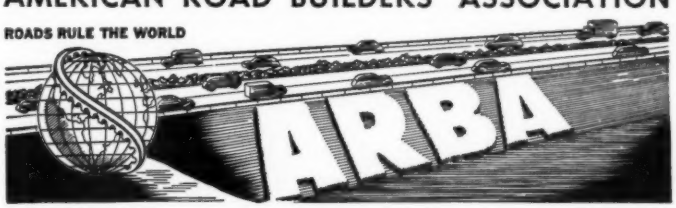

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WHO'S WHO

Among the Authors in this Issue

Elizabeth Peeples

ELIZABETH PEEPLES (*The National Community Christmas Tree*), writes from first hand personal knowledge of the history of the National Community Christmas tree at Washington, and its annual lighting. For eight years, from 1931 through 1938, Mrs. Peeples served as director of the Community Center Department of the District of Columbia public schools. The organization of the executive committees and the effective cooperation of federal agencies, civic organizations and individuals revolved to a considerable extent around her inspiring personality. She is a native Washingtonian and served for a number of years as director of nature study in the public school system of the city. She is now principal of the E. V. Brown School in Washington.

NELSON C. BROWN (*War and Wood in Germany*) is in charge of the Department of Forest Utilization at the New York State College of Forestry at Syracuse. Mr. Brown, an authority on professional forestry, has written widely on this field.

W. E. Crouch

W. E. CROUCH (*Bagging Game Law Violators*) is chief of the Division of Game Management of the Bureau of Biological Survey. Mr. Crouch joined the Survey in 1916 as a predatory-animal and rodent-control worker. In 1928 he was appointed assistant chief of the Division of Predatory Animal and Rodent Control, and a few years later was assigned to his present post.

DAVID P. GODWIN (*Smoke Jumpers*) is Assistant Chief of the Division of Fire Control of the federal Forest Service. Mr. Godwin, who has been with the Service for fourteen years, has spent nine of them in specializing on fire control work. Now at the Washington, D. C., office, he served as a forest supervisor for a number of years on the West Coast.

SAMUEL LUBELL and AL POLLARD (*Pine Tree Bankers*). Mr. Lubell, upon his graduation from the School of Journalism at Columbia University, was awarded a Pulitzer Traveling Scholarship and spent nine months in Europe studying agricultural conditions. Upon his return he went into newspaper work but left that because of his curiosity to see what was happening in the United States—and took his third trip around the continent. Mr. Pollard, a native of Arkansas, has always been especially interested in the resources of his home state. For a while he was with the Arkansas State Planning Board writing a book on the state's resources. Writing is a hobby which he uses to every advantage to tell what the people of Arkansas are doing; and in pine tree banking he saw an opportunity to spread the Arkansas gospel. Among his hobbies Mr. Pollard numbers *Life Today* (a column which he began in 1935 and which is about to be syndicated)—photography, drawing and sketching, touring,—and buttermilk with cornbread.

Hazel O. Metzner

HAZEL O. METZNER (*Christmas in the North Woods*) says that any day of the year, winter and summer, she can be found tramping the woods during her spare time, always with a dog or two or three at heel. Before her marriage to Dr. Horace E. Metzner, she spent several years as a case worker for a welfare association, and also as a librarian.

HENRY S. GRAVES (*The Cooperative Forest Restoration Bill*), who has just resigned as Dean of the Yale Forest School, is a director of The American Forestry Association. Outranked by none in his profession, a leader in educational and administrative fields, for ten years he served as the nation's chief forester.

Stewart H. Holbrook

STEWART H. HOLBROOK (*Chefs of the Tall Timbers*), who has long been a contributor to AMERICAN FORESTS and is the author of "Holy Old Mackinaw," has just brought out his latest book, "Iron Brew," the fast-moving story of iron ore and steel.

G. H. COLLINGWOOD (*Red Spruce*) is Forester for The American Forestry Association.

A. ROBERT THOMPSON (*Your Shade Trees*) is in charge of shade tree work with the branch of forestry of the National Park Service.

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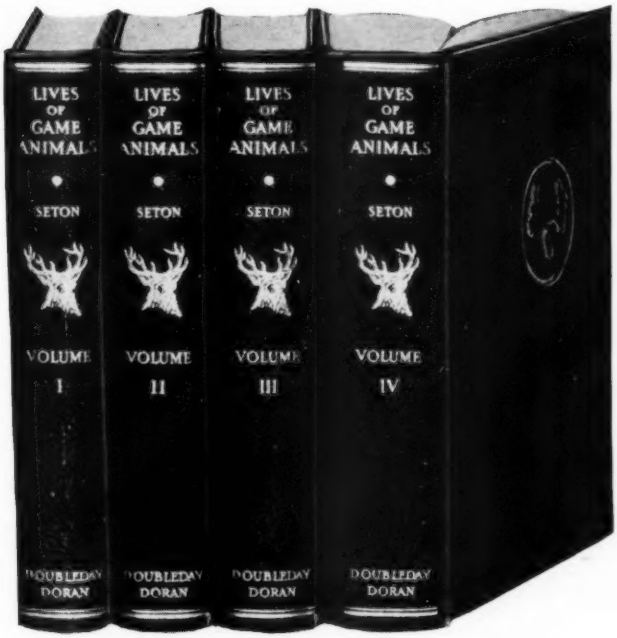

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